NEW-YORK FARMER,

AND

AMERICAN GARDENER'S MAGAZINE.

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D. K. MINOR, and GEO. C. SCHAEFFER, } EDITORS AND PROPRIETORS.

FOR JANUARY, 1837.

NEW SERIES—VOL. IV.

NEW-YORK FARMER.

JANUARY 1, 1837.

The Baltimore Farmer & Gardener has passed into the hands of Messrs. Sands & Wilson. Mr. E. P. Roberts still retaining his interest and conducting the editorial department.

From the American Railroad Journal.

MR. D. K. MINOR.—Dear Sir,—being a subscriber to your valuable and interesting Journal, I am favored with the perusal of comments, (extracted from the Journal of the Franklin Institute,) on the production and manufacture of Salid, or Table Oil, in the United States, to be procured from the seeds of Poppy; requesting information relative to what is already considered a very interesting part of French Husbandry, &c., being and having been, a participator in the interest of this very important inquiry, and being a practical manufacturer of various kinds of Oils, I have made such investigations, as I will venture to pen down, in answer to the request set forth in the columns of the Journal of the Franklin Institute, and submit the same to you for publication, should it meet with such approbation as will entitle it to a place in the columns of your Journal. In December 1824, Mr. Daniel Markham, of Madison Co., N. Y. obtained Letters Patent, from the Government of the United States, for the discovery and art, of manufacturing Oil from the seed of Poppy, to be used for culinary, and many other important purposes. But ignorance and prejudice, being predominant in the minds of those who have been addressed on this subject, sickness and indigence on the part of the enterprizing projector, have ever held in check, the advancement of this important object in this country, for which reasons, it is believed, the patentee has just claims for a renewal of his patent, for seven years after the original has run out, to effect which, I believe, he is about to take preliminary measures. Myself and others, have from repeated trials, ascertained that 100 bushels of Poppy Seed can be procured from one acre of good land, after allowing amply for waste, &c. Doctor L. Bishop, of Oneida County, has raised the present season, at the rate of 147 bushels per acre, with taking very little pains in cultivation. This may seem to be, (in the minds of many,) an absurd exaggeration. but it is no less strange than true, and one bushel of this seed, will yseld from eight to twelve quprts of oil of the first order; possessing (when drawn cold and pure,) a transparency equal to the best spring water, and a flavor far more delicious than the Olive; it is extremely limpid, and never chills with frost. The present price of this Oil in the City of New-York, is 50 cents perpint, and is saught after, by the portrait painters, being the finest and best Oil for their business. When burnt in a lamp, it sends forth a brilliant flame, and emits but little smoke; its medicinal qualties are mild, harmless, though effective in many cases, as proved by practice—it seems to possess none of the narcotic quality of which the poppy is so abundantly supplied, but seems to be admirably calculated for the table, and I doubt not. but the time is near at hand, when the genteel portion of our community, may oil their palates from the production of their own soil, and no longer be under a compliment to France, Flanders, or any other foreign country, for a similar enjoyment. I think the most proper time is the fall of the year, for sowing the seed, and as late as the frost will permit—there has been by myself and others, various methods resorted to, for the cultivation of the Poppy; but I venture to say the best mode is yet verry far in the shade; but I hope that some of our agriculturists will take the trouble o appropriate a small piece of land, and a few hours time by way of experiment on this new piece of husbandry, (however trivial it may appear at first,) I doubt not they will be highly pleased aud amply rewarded for their pains.

Sir, I am with much esteem,
very sincerely your humble servant.
E. S. S.

Paris, Oneida Co., N. Y. Oct. 1836.

From the Maine Farmer.

ANTI-CATTLE CHOKER.—Our worthy friend Paine Wingate, has left in our office an instrument with the above title. It is what is *vulgarly* called a tarred rope, and we should call it a very useful and efficient instrument. There should be one in every neighborhood, for it is a fact that cattle are liable to get choked, the world over, and being choked ought to be relieved by the aid of man. But why is a tarred rope better for this purpose than a *cordwood stick?* For various reasons. It is sufficiently stiff to effect the business nine times in ten, and at the same time has that kind of elasticity which will accommodate itself to a position or passage not entirely straight.

In order to make one, take a piece of tarred rope, say one inch in diameter, and six feet long, Untwist it three or four inches at the end and leave a tuft of it loose in order to make a kind of ball or swablike end, then wind round it a piece of canvass or cloth in order to make the surface smooth, and over this roll or wind some spun yarn tightly and smoothly. In cold weather this rope should be warmed a little before using, and in warm weather it is well to wet it. When about to use it the tuft at the end should be tarred back, and this will make a soft but sufficiently solid bulb to fill the gullet when pushed down.

SEED HOD.—The above gentleman has also deposited for a shost time, a vessel called a lift or seed hod, an implement well known in some places, but not seen in this vicinity very often. It is simple in its form and construction, and its use is to carry seed and other things when sowing. It is of an oval shape with sides bent in somewhat like the body of a fiddle. On one side is a hook and on the other an upright handle. When in use it has a band put over the shoulder and hooked into the hook; this brings it up snug to the left side of the body, and the left hand takes hold of the upright handle while the right hand is at liberty to scatter the seed. We hope some of our coopers will call and look at it, and "*get about*" making some of them for this market.

From the Cultivator.

CULTURE OF COTTON.

J. BUEL, DEAR SIR—Having recently become a subscriber to your very valuable publication, the "Cultivator," and deeming it highly incumbent upon each subscriber, to contribute his "quota" of agricultural information towards promoting the end of your publication, I send you the following as the most generally adopted mode of cultivating cotton in North Carolina. The land is "bedded," or broken up as soon after picking out as possible, (the earlier the better) with a plough drawn by two horses. The beds are from 3½ to 4 feet wide. After the earth has settled, and become somewhat indurated through the influence of rains and the sun, a double horse harrow is applied to the ridges, succeded immediately by a smaller one, which reduces the land to a perfec-

state of pulverization. Next follows the "marker," drawn by one horse, which makes a small trench on the middle of the ridge, in which the seed are strewn by hand. The seeds are rubbed, previous to planting, in ashes and water, which process embodies three distinct advantages. 1. It enables each seed to assume a separate position when sown. 2. It acts as a stimulant upon the plant—and 3d. It checks the ravages of that destructive insect, the "cut-worm." The seeds are covered very lightly, say from 1 to 1¼ inches, by means of a small harrow of 6 or 8 teeth. Next in order is the process of "shaving," which consists in applyiug the weeding-hoe to each side of the cotton on the ridge; after which the bar of a single-horse plough is run at such a distance from the cotton as will not disturb its lateral roots, by which, all the grass that is taken from the vicinity of the plant is entirely covered in the middle of the alley or water-furrow. About 8 or 10 days subsequent to this, (the grass being completely dead) a triangular harrow is run upon the list formed by the two furrows thrown *from* the cotton, and two furrows thrown *to* the cotton, by means of a small plough. I forgot to state above, that immediately after "shaving and barring," the cotton is chopped through by the weeding-hoe, at intervals of 8 or 10 inches, and the most promising and luxuriant stalks selected, leaving from one to two in a hill. Next follows the "dirting process," as it is termed, which by some is done with the hand, by others with the hoe. The former mode is too laborious, and far from being the most *effectual* and *expeditious*.—When the cotton has attained a considerable height, the bar is run very *shallow*, and the plough is run *deep*, when the mould-board is turned to the cotton, to prevent "*firing*." The cultivation then is perfected by alternately "barring" and turning the mould-board to the cotton, immediately followed by the hoes, for the purpose of more effectually dirting the cotton, and uncovering those branches which the mould-board may have covered. Some of my neighbors "top" their cotton; they think it causes the plant to expand more, and form more pods. I should like to see in your next number a description of the "Cultivator," which you recommend to your readers, as entirely superceding the necessity of the plough and hoe in the cultivation of Indian corn, together with a detail of the best method of cultivating that article.

With unfeigned respect,
I am yours,
AGRICOLA.

NORTH-CAROLINA, 1st Nov. 1836.

From the Northampton Courier.

PEA-NUT CACOONS FROM ITALY.

We have seen some cacoons of a superior quality, raised in Northampton the present year, being the product of Italian eggs, 240 of which weighed one pound—one peck of which were reeled at Northampton Silk factory, produced seven ounces of silk, of superior fibre and most brilliant lustre, being at the rate of 1¼ pounds of silk to a bushel. The cacoons were long, firm, and in the shape of a Pea-nut, having a depression or stricture mid-way of the cacoon. They were small, firm and heavy, the thread of unusual length, so much so that the reeler almost despaired of finding an end.

We have the impression that the worms were fed on the Canton mulberry. We understand the demand for, and sales of mulberry trees and cuttings this fall is unprecedented. We approve of the removal of the trees to the place of destination, before winter, that they may be ready for setting next spring, and avoid exposure to the spring frosts and drying winds. Trees and cuttings should be set immediately after being removed from the place of deposite.

The present prospect is, that the silk growing business will be prosecuted with more energy the next, than in any preceding year; an impulse has been given, that cannot be easily checked or paralysed. It is hoped that the few individuals who have thoroughly investigated and tested the mulberry culture, will not relax their exertions to acquire and communicate practical and useful information on the subject of silk culture, but that they will persevere until a mulberry patch shall be planted, and found as common about every mansion in the country village and cabin of the forest, as is the currant bush in our gardens.

It has been proved by actual experiment that worms may be fed on the foliage of the Chinese mulberry the same year the plants or cuttings are set out, with evident benefit to the plant, producing more foliage, and may be plucked the same season, always leaving the leading shoots untouched until the last collection of the foliage, and then take off the leading shoots to facilitate and promote the formation of wood.

From the Farmers' Register.

COMPARATIVE VALUE OF APPLES, TO FEED STOCK, AND FOR SALE, AND THEIR PRODUCTS, CIDER AND BRANDY.

NOVEMBER 4, 1836.

During the two last summers and falls, my duties called me into the apple regions of the north. The following facts were obtained, in reference to the subject of apple cider and brandy.

1. Cider drinkers are peculiarly subject to rheumatism, to inflamed eyelids, to headache, bleeding at the nose, to sores and ulcers, difficult and tedious to cure, to affections of the stomach and bowels, and to premature trembling of the hand and head.

2. Cider drunkards are the most brutish and cruel of the unhappy tribe of inebriates.

3. An old orchard and a distillery, are almost invariably indices of widows, orphans, poverty and drunkenness.

4. There is a great loss of money in making either cider or brandy. Good eating apples are worth on an average 25 cents a bushel. Eight bushels of apples make a barrel of cider, and twelve barrels of cider make one barrel of brandy. Brandy at 50 cents per gallon would give about 15 cents per bushel for the apples. The loss is ten cents per bushel. This, on an orchard of one hundred trees, in ten years, would be over one thousand dollars! No allowance is made for capital and labor connected with distilling. Take these into consideration, and the loss is much greater.

5. It costs no more to raise good apples, suitable for market, than to raise apples only suitable for distilling. Very often apples are worth one dollar per bushel, and then the loss is immense, by turning them into brandy.—I am told that in Mobile, apples sell now for ten dollars a barrel.

6. Engrafting and budding will change the character of an orchard, and more than compensate for the time and amount lost in producing the change, in ten years.

7. Apples make most excellent food for horses. Several physicians of extensive practice, in Connecticut and Massachusetts, feed their horses on apples and hay. I have never seen fatter horses—more sleek and spirited. The hair is much more lively, and requires less grooming than that of horses fed on grain. Mr. Norton of Farmington, Connecticut, has about the finest pair of hosres I have seen. They are fed mainly on apples and hay. They travel very fast, and seem to have both wind and bottom. It is proper, however, to remark, that not as much grain is given to horses at the north, as is customary at the south. One thing is worth noticing—horses fed on apples do not eat as much hay as when they are fed on grain. Very sour raw apples injure the teeth of horses; but when boiled they do not.—The rule of feeding is to commence with a small quantity and gradually increase to a bushel a day, for one horse.

8. Apples are most excellent food for beeves. The fattest beef I have seen, was made so on sweet apples.

9. Nothing will fatten mutton quicker than apples. It is necessary, or best, to cut up the apples when fed to sheep.

10. Hogs care nothing for corn if they can get apples: if sweet, the apples may be given without boiling: if sour, they must be boiled. Mixed with corn meal the flesh is firmer.

11. Apples increase the quantity and quality of milk. At first there was a prejudice against giving apples to milch cows; because it was thought they diminished or dried up the milk. It is true, that a *gorge* of apples, or any other green food, will cause a fever, and dry up the milk; but given in proper quantities, the effect is quite different.

12. Cattle and hogs are purchased and fattened on apples, and sold at a fine profit, when to fatten them on corn would ensure a loss.

13. Sweet apples and good eating apples are to be preferred as food for horses, sheep, and cows: also for hogs; though some recommend a mixture of sour and sweet for hogs.

If these remarks shall induce any one to test their correctness, by making a fair experiment, the object of my writing them will be fully answered.

THOMAS P. HUNT.

The subjoined article, whose *heading* would lead one to think that it related altogether to paintings, is a treatise on *Mulberries*, and without according in all the views of the writer, we give it to the public, reserving to ourself the right of speaking to it hereafter.—[Far. and Gar.]

From the Northampton Courier.

ELEGANT CHINESE PAINTINGS.

A gentleman who has long been engage

in the Canton trade, often visited that city, and had opportunities to become acquainted with the manners and habits of Chinese, has lately visited Northampton to become acquainted with the state of the silk culture here, from whose scrutinising observations made in China, much valuable information has been obtained. The same gentleman loaned the subscriber a volume of splendid Chinese Paintings, which confirms our practice and culture of the Chinese mulberry as correct and proper. These paintings represent the men, women and children in their national costume, at work—commencing with gathering the mulberry seed, cleaning the same, and then preparing the ground, sowing the seed, transplanting the young seedlings, gathering the foliage, feeding the worms, heading or cutting down the plants to 2 or 4 inches above the ground, as *we do*, and every process of their management, to making up of the silk into skeins, as *we import it*, and the further process of winding the silk upon spools.

There are 28 plates, illustrating the different processes. The out door men laborers are dressed in plain loose frocks and trowsers, descending to the knees; some of the men with bare feet and legs; others with sandals and wooden shoes, adapted to their respective work of getting the plants in forwardness for feeding the worms.—The women, boys and girls are employed in gathering leaves, feeding the worms, reeling silk, &c. Some of the ladies have elegant *loose* dresses, of various brilliant colors, ornamented with wide embroidery around the neck and sleeves. The upper dress is loose, of gay colors, the sleeves large, and extend a little above the elbow; and all the females are dressed in *pantalettes* of various colors, each in contact with the upper dress—the countenance fair, delicate and intelligent, eyes downcast; most of the females have small feet and gay sandals; the hair neatly dressed, ornamented, and all wear bracelets above the wrists. As the original plates can be seen by only a few, it may be desirable to hear some description of each print, for the gratification of those who take some interest in the culture of silk.

The plates make it evident, that although the Chinese sow the mulberry seed *broad cast* as we do small grain, yet they do not let it long grow in that state, nor do they cut it off (as we do grass) for feeding worms, but they transplant it into settings or hills, like our Indian corn, and that it does not grow more than three or four feet in height, and is cut down every year to keep it in a shrubby state. Experience has convinced us that this procedure of taking off the tops to 2 to 4 or even 6 inches above the root, every autumn, and covering the stump with earth, is the best way to secure the Chinese mulberry against the severity of winter, and is also a sure method to multiply the number of trees and increase the quantity of foliage.

Some people have thought that the Chinese mulberry seed grew on trees of some height, like white mulberry (and on this account have been desirous of procuring large trees); so far as we have had experience, this is not the fact with the Canton mulberry, although it may be true of Manilla and other varieties.

The first plate represents the seed growing very near the ground, like the Canton mulberry, from the seed of which I imported and sowed in 1834. In 1835, one of the seedling trees being laid down, the layer sprouts produced full size mulberries, too late, however, for ripening. The same root this year, 1836, grew branches which were again laid down, and the layer sprouts, when 4 or 5 inches high, again had mulberries formed, which ripened in season for sowing, from which seed I have two small trees carefully preserved, to ascertain its character. After the seed had been gathered, the *same layer sprouts* again, with others, had plump mulberries formed, but were destroyed by birds or fowls. Both crops were formed only a little above the root or foot of the layer tree, and some of them rested on the ground. I have neither seen or heard of any other of the Canton plants producing seed; but what has already occurred here, in the formation and product of seed, together with the representation and the gathering of the seed and the description of the leaf in the Chinese paintings, confirms the opinion, that the *Canton Mulberry*, so called here, is the same as used in China for feeding worms. Experiments have been made this year in feeding worms with the Black, White, Manilla, and the Canton Multicaulis, and the worms evidently preferred the Canton to either of the others. If any one is possessed of the evidence that the Manilla Multicaulis is ever used in China for feeding worms, he is requested to make it known. The first notice we have of it is, that it was cultivated at Manilla as a *tree of ornament*. After being introduced into France, it was found that the silk worm would feed upon the Manilla, as they had done upon the white or black mulberry, in Europe or America. Last year a Manilla multicaulis of 6 or 7 feet in height produced a few seed, which grew several feet from the ground. The seed was planted and two or three of them vegetated and were preserved through the winter, and set out in spring, 1836, and grew about 2½ feet.—The leaves were in shape and size very different from the original tree, and the leaves not more than one quarter as large as the leaves of the parent stock. It may be noted, that a number of old white mulberry trees which have annually borne seed twenty or thirty years, grew within about forty rods of the Manilla multicaulis; the Multicaulis was exposed last winter on the southerly side of a building, and this year the dead tops have been taken off, but has not produced any seed, or even borne a blossom.

D. Stebbins.

MEMORANDUM OF AN EXCURSION TO THE TEA HILLS, WHICH PRODUCE THE DESCRIPTION OF TEA KNOWN IN COMMERCE UNDER THE DESIGNATION OF ANKOY (NGANKE) TEA; BY G. J. GORDON, ESQ.

"Having been disappointed in my expectations of being enabled to visit the Bohea hills, I was particularly anxious to have an opportunity of personally inspecting the tea plantations in the black tea district, of the next greatest celebrity, in order to satisfy myself regarding several points relative to the cultivation, on which the information afforded by different individuals was imperfect or discordant.

"Mr. Gutzlaff accordingly took considerable pains to ascertain for me, from the persons who visited the ship, the most eligible place for landing with the view of visiting the Ankoy hills; and Hwuytow bay was at length fixed upon as the most safe and convenient, both from its being out of the way of observation of any high Chinese functionaries who might be desirous of thwarting our project, and from i s being equally near the tea hills as any other part of the coast at which we could land."

"The wind being unfavorable, we made rather slow progress by rowing, but taking for our guidance the masts of some of the junks which we observed lying behind a point of land, we pulled to get under it, in order to avoid the strength of the ebb tide, which was now setting against us. In attempting to round the point, however, we grounded, and soon found that it was impossible to get into the river on that side, on account of sand banks which were merely covered at high water, and that it was necessary to make a considerable circuit seaward to be able to enter. This we accomplished, but not till 1 A. M. At this time a light breeze fortunately springing up, we got on very well for some time, but were again obliged to anchor at ¼ past 2, from want of water. As the tide rose, we gradually advanced towards the town of Hwuytow, till we came to one of those bridges of which there are several along the coast, that extend over wide sand flats that are formed at the mouths of the rivers. These bridges are constructed of stone piers with slabs of stone laid from pier to pier, some extending over a space of 25 feet and upwards, and others being from 15 to 20 feet span. As the length of the bridges cannot be less than three quarters of a mile, the whole is very striking as a work of great labor, if not exhibiting either much skill or beauty. We were informed by some boat people that we should not find water to carry us beyond the bridge, but observing some tall masts on the other side, we resolved on making the experiment, and pushing on as far as we could. It was almost dark when we passed under the bridge, and we had not proceeded far when we were again aground. This, however, we attributed to our unacquaintance with the channel, and as the tide floated us off, we continued advancing, notwithstanding, the warning of a friendly voice from the bridge, that entreated us to return to the town, promising us comfortable quarters, and a guide, &c. Being rather distrustful of the motives of this advice, however, we proceeded for some time longer but at length found it impossible to proceed farther, the ebb having at the same time commenced. We therefore spread an awning, and prepared to make ourselves as comfortable as possible for the night. The day had been the warmest we had experienced for a month past, but the night was very cold, and our boat, as may be imagined, far from commodious for so many people. At daylight,

we found that there was not six inches of water in any part of the channel, and from the boat we stepped at once upon dry sand. The survey from the bank showed plainly that it was impossible to proceed any further by water. We accordingly prepared to march on foot, taking with us three lascars, who might relieve each other in carrying our cloak-bag of blankets and great coats, as well as some cold meat. We ordered the people to prepare a meal as fast as possible, intending to make a long stretch at first starting, and Mr. Nicholson was directed to remain in charge of the boat with five lascars, to move her down under the bridge on the return of the flood, and there to await our return for four or five days. Crowds of people now began to gather around the boat, moved by mere curiosity. Mr. Gutzlaff induced some of them to get ducks and fowls, for the use of the boat's crew, and strange to say, prevailed on one man to become our guide, and on two others to undertake to carry our baggage, as soon as we should be a little farther off from the town, and out of the way of observation."

"Skirting the town of Hwuytow, we proceeded in a N. N. E. direction, at a moderate pace, for an hour and a half, when we stopped at a temple, and refreshed ourselves with tea. Nothing could be more kind or more civil than the manners of the people towards us hitherto, and if we could have procured conveyances here so as to have escaped walking, in the heat of the day, loaded as we were with heavy woollen clothes, we should have had nothing further to desire: as it was, my feet already began to feel uncomfortable from swelling, and after another hours march, I was obliged to propose a halt, till the cool of the evening. Fortunately we found, however, that chairs were procurable at the place, and we accordingly engaged them at half a dollar each. They were formed in the slightest manner, and carried on bamboo poles, having a cross bar at the extremities, which rested on the back of the bearer's neck, apparently a most insecure as well as inconvenient position; but as the poles were at the same time grasped by the hands, the danger of a false step was lessened. We had not advanced above a mile and a half before the bearers declared they must eat, and to enable them to do so, they must get more money. With this impudent demand we thought it best to comply, giving them an additional real each. After an hour's further progress, we were set down at a town near the foot of the pass which we had to cross. There the bearers clamorously insisted on an additional payment before they would carry us any further. This we resisted, and by Mr. Gutzlaff's eloquence gained the whole of the villagers, who crowded around us, to join in exclaiming against the attempted extortion. Seeing this, the rogues, submitted, and again took us up.—Mr. G., mentioned that while we were passing through another village, the people of which begged the bearers to set us down, that they might have a look at us, they demanded 100 cash as the condition of compliance. The country through which we passed swarmed with inhabitants, and exhibited the highest degree of cultivation, though it was only in a few spots that we saw any soil which would be deemed in Bengal tolerably good; rice, the sweet potato, and sugar cane, were the principal articles of culture. We had now to ascend a barren and rugged mountain, which seemed destined by nature to set the hand of man at defiance; yet even here, there was not a spot where a vegetable would take root, that was not occupied by at least a dwarf pine planted for the purpose of yielding fire wood, and a kind of turpentine; and wherever a nook presented an opportunity of gaining a few square yards of level ground by terracing, no labor seems to have been spared to redeem such spots for the purpose of cultivation. In ascending the pass, we soon came to places where it was difficult for our bearers to find a footing, and where they had consequently to pick out their steps as they advanced. To assist themselves, they gave the chair a swinging motion, with which they kept time in raising their feet. This was far from agreeable, and the first impression was that it was done merely to annoy, but we very soon saw that the object was different. The highest point of the pass I should conjecture to be about 1200 feet above the plain, and the descent on the north side to be nearly equal to the ascent from the south, say 1000 feet. At half past four we arrived at a rather romantic valley, which was to be our halting place for the day."

"Nov. 12th. Got into our chairs at a quarter past six, A. M., and proceeded along a narrow rugged dell towards Koeboe. Several nice looking hamlets were seen on the way. The people were engaged in reaping the rice, which seemed heavy, and well filled in the ear. In several places, I observed that they had taken the pains to tie clumps of rice together for mutual support. Sugar cane is bound in the same way, and for additional security, the outside canes are mutually supported by diagonal leaves, which serve at the same time to form them into a kind of fence. The leaves are not tied up round the stalks as in Bengal; the cane is slender, white, hard, and by no means juicy or rich; yet, abating the black fungous powder, which is very prevalent, the surface is healthy, and close growing in a remarkable degree.—We arrived at Koeboe at eight o'clock, and finding we could get water conveyance for part of the way on which we were proceeding, we engaged a boat for that purpose.—After a hearty breakfast, we embarked at 10 A. M. amidst crowds of people who covered the banks of the river at the ghat. On inquiry, we found that the river on which we were proceeding in a W. N. W. course, was the same which passed Nganke heen, and flowed to Tseuenchow foo. The boat was large, but light, and being flat bottomed, drew very little water. The stream was so shallow, that it was only by tracing the deepest part of the channel from side to side of its bed, that we were able to advance at all. This was done by poling; in several places the stream was deepened by throwing up little banks of sand so as to confine its course within a channel merely wide enough for the boats to pass through. I estimated the width from bank to bank at 200 yards, and should judge from the height at which sugar is cultivated above the level of the present surface, that the greatest depth in the rainy season does not exceed 10 feet. Being entirely fed by mountain torrents, its rise must be often very sudden, but I did not observe any traces of devastation in its course. Its name, Nganke, or 'peaceful stream,' is probably derived from this circumstance: the valley on each side seemed well cultivated, the banks being principally occupied by sugar cane. At every village the people poured out as usual to see us, vying with each other in marks of civility and kindness. The day, however, becoming very hot, we took shelter from the sun under the roof of the boat, to the disappointment of many who waded into the water to gratify themselves with a sight of the strangers. Coming at last to a high bank close to a populous town, they actually offered the boatman 400 cash if he would bring us to; and on his refusal, the boys began pelting the boat with clods and stones. On this, Mr. Gutzlaff went on deck to remonstrate, and Mr. Ryder to intimidate with his gun. Betwixt both the effect was instantaneous, and the seniors of the crowd apologized for the rude manner in which the boys had attempted to enforce the gratification of their curiosity. We had been in vain looking out all yesterday and today for a glimpse of tea plantations on some of the rugged and black looking hills close in view, though at almost every place where we halted, we were assured that such were to be found hard by."

"Arrived at Toa-be, we were hospitably received by the family of our guide, and soon surrounded by wondering visitors.

"Mr. Gutzlaff speedily selected one or two of the most intelligent of them, and obtained from them ready answers to a variety of questions regarding the cultivation of the tea plant. They informed him that the seed now used for propagating the plant was all produced on the spot, though the original stock of this part of the country was brought from *Woo-e-shan*; that it ripened in the 10th or 11th month, and was immediately put into the ground where it was intended to grow, several being put together into one hole, as the greater part was always abortive; that the sprouts appeared in the 3d month after the seeds were put into the ground; that the hole into which the seeds are thrown is from three to four inches deep, and as the plants grow, the earth is gathered up a little arouud the root; that leaves are taken from the plants when they are three years old, and that there are from most plants four pluckings in the year. No manure is used, nor is goodness of soil considered of consequence; neither are the plants *irrigated*.—Each shrub may yield about a *tael* of *dry* tea annually (about the 12th of a pound.) A *mow* of ground may contain 300 or 400 plants. The land tax is 300 cash, (720 to a dollar,) per mow. The cultivation and gathering of the leaves being performed by families without the assistance of hired laborers, no rate of wages can be specified; but as the curing of the leaf is an art that requires some skill, persons are employed for that particular purpose, who are paid at the rate of one dollar per pecul of fresh leaves, equal to five dollars per pecul of dry tea.—The fire-place used is only temporary, and all the utensils, as well as fuel, are furnished by the curer of the tea. They stated that the leaves are heated and rolled seven or eight times. The green leaf yields one fifth of its weight of dry tea. The best tea

fetches on the spot $23 per pecul, (133⅓ lbs.) and the principal part of the produce is consumed within the province, or exported in baskets to Formosa. That the prevailing winds are northwesterly. The easterly winds are the only winds injurious to the plants. Hoar frost is common during the winter months, and snow falls occasionally, but does not lie long, nor to a greater depth than three or four inches. The plant is never injured by excessive cold, and thrives from 10 to 20 years. It is sometimes destroyed by a worm that eats up the pith, and converts both stem and branches into tubes, and by a gray lichen which principally attacks very old plants. The period of growth is limited to six or seven years, when the plant has attained its greatest size. The spots where the tea is planted are scattered over great part of the country, but there are no hills appropriated entirely to its culture. No ground, in fact, is formed into a tea plantation, that is fit for any other species of cultivation, except perhaps that of the dwarf pine already alluded to, or the *Camellia oleifera*. Mr. Gutzlaff understood them to say that the plant blossoms twice a year, in the eighth moon or September, and again in winter, but that the latter flowering is abortive. In this I apprehend there was some misunderstanding as full sized seeds, though not ripe, were proffered to me in considerable quantities early in September, and none were found on the plants which we saw. I suspect that the people meant to say that the seeds take eight months to ripen, which accords with other accounts. We wished much to have spent the following day the (13th) in prosecuting our inquiries and observations at Toa-be and its neighborhood, but this was rendered impracticable by the state of our finances. We had plenty of gold, but no one could be found who would purchase it with silver at any price. We therefore resolved on making the most of our time by an early excursion in the morning, previous to setting out on our return.

"We accordingly got up at day break, and proceeded to visit the spot where the plants were cultivated. We were much struck with the variety of the appearance of the plants: some of the shrubs scarcely rose to the height of a cubit above the ground, and those were so very bushy that the hand could not be thrust between the branches. They were also very thickly covered with leaves, but these were very small, scarcely above ¾ of an inch long. In the same bed were other plants, with stems four feet high, far less branchy, and with leaves 1½ to 2 inches in length. The produce of great and small was said to be equal. The distance from centre to centre of the plants was about 4½ feet, and the plants seemed to average about two feet in diameter. Though the ground was not terraced, it was formed into beds that were partly levelled. These were perfectly well dressed, as in garden cultivation, and each little plantation was surrounded by a low stone fence, and a trench. There was no shade, but the places selected for the cultivation were generally in the hollows of hills, where there was a good deal of shelter on two sides, and the slope comparatively easy. I should reckon the sight of the highest plantations we visited to be about 700 feet above the plain, but those we saw at half that height, and even less, appeared more thriving, probably from having somewhat better soil, though the best is little more than mere sand. I have taken specimens from three or four gardens. Contrary to what we had been told the preceding night, I found that each garden had its little nursery, where the plants were growing to the height of four or five inches, as closely set as they could stand; from which I conceive that the plant requires absolutely a *free* soil, *not wet*, and *not clayey*, but of a texture that will retain moisture; and the best site is one not so low as that at which water is apt to spring from the sides of a hill, nor so high as to be exposed to the violence of stormy weather. There is no use in attempting to cultivate the plant on an easterly exposure, though it is sufficiently hardy to bear almost any degree of dry cold."—[Chinese Repository.]

From the Farmers' Cabinet—Philadelphia.

[We bespeak for the following communication the careful and candid consideration of our readers, as the subject is one of great moment. The author, Mr. RONALDSON, is well known as one of our most respectable and enterprising citizens. He is the same gentleman who succeeded in directing the attention of our citizens to the culture, of the Beet Root for the fabrication of sugar; (see Cabinet No. 4. vol. 1.) and his object in this enterprise, like that just referred to, is to benefit the community without any reference to pecuniary gain.]

TO THE FARMERS OF THE UNITED STATES.

That care and skill have improved fruit trees, vegetables, and our domestic animals are facts known to all classes of husbandmen, and the advantages of rearing cattle from the best breeds is now well understood all over America. The advantages that accompany procuring the best grain for seed is as yet but partially understood and very little attended to.

Repeatedly sowing some kinds of grain on the same land, is in many cases followed by an evident decline in the quality; still this, it must be observed is not a uniform consequence; there are many and well authenticated instances where the change to a new soil and climate is accompanied with a deterioration, and in others as great an improvement has taken place.

As it is known that grains, &c., in some climates and soils degenerate to a minimum, sometimes in quality, in others in quantity, and frequently in both; a practice calculated to remedy these disadvantages is of great importance to the agriculture of the United States. On the present occasion it is our object to point out what may be done here, by showing what is done in other countries, and under circumstances far less favorable to the husbandmen, or to the operations of husbandry, than in America. In Scotland, for example, the climate is cold, wet and stormy; yet by care and industry crops are produced, remarkable both for quantity and quality.—There the greatest attention is paid to the changing of seed. The low countries procure their seed potatoes from the high districts at great expense of money and labor. The whole oat crop of some districts is bought for, and sowed for seed; this is the case with a portion of country called Blainsley, that lays south of Soutria Hill. In no country has the culture of clover been more beneficial, or attended with better success than in Scotland, yet the climate is so unfavorable to the ripening of clover seed, that nearly the whole has to be procured from England or Holland. The farmers of that country frequently change the wheat seed, and procure the best that is to be had, paying very little respect to price, and the greatest attention to quality.

It would appear that the principle by which the Scotch farmers are guided to the results they obtain, is to select their seed from those districts where it is grown in the greatest perfection, from the climate and soil being best adapted to the plant. Thus they choose seed oats and potatoes of their own growing, these being plants best adapted to mountainous, cool and moist regions; and clover and wheat seed from England and Holland, which are comparatively low, warm and dry, and better adapted to their production.

It is well known that in America, our oats are not good, they have little kernel or meal; and the quality of our Barley is not what it ought to be.

It is to the following circumstance the present address owes its existence.

In the year 1833, a well informed practical farmer visited Pennsylvania with the object of seeing as much of our practice of farming, soil and climate, as a short stay here would permit. On his return to Scotland, he procured and sent to his friends in Philadelphia some Angus Oats, Hopeton Oats, Barley, Wheat and Rye-grass; the cask containing the seeds miscarried and did not arrive here until the fall of 1835.

Some of each kind of these seeds have been sown here; the wheat come up very thin; it is presumed the seed suffered from the long voyage. On the 18th April, 1836, the Oats and Barley were sown on rather poor but fresh loam. It is true, the season has been cool, damp and favorable to these grains, still their success has surpassed any thing that could have been calculated on.—The Barley and both kinds of Oats are of superior growth in strength of stem, as well as thickness on the ground; they would lose nothing in a comparison with the crops of Oats or Barley of any country, and are likely to suffer loss from excessive growth, causing them to lodge. One kind of Oats commenced shooting into ear about the 1st of July, and the other about the tenth; the marks which were placed to distinguish the one from the other had got displaced, and this accident prevents knowing whether it is the Angus or Hopeton Oaats that first puts out the ear.

Now let me inquire into the economy of farmers adopting the practice of annually supplying themselves with new seed grain and found our calculations on a farm where about 20 bushels of Oats are sown each year; the farmer of such a piece of land could supply himself with an annual change of his Oat seed in the following manner. It is presumed that each bushel of the imported Oats he sows, will produce 10 bushels; then by annually buying two bushels, their produce would yield the 20 bushels required for sowing on his farm. Suppose the price of the imported Oats to be $1,50 cents a bushel, the two would cost $3—and the price of country

oats was 50 cents, the two would cost $1.—The expense of changing the seed would be per annum $2. The estimate is not given as a matter of accuracy, but as a formula by which every one can make his own calculations.

In procuring a change of seed, there are other points necessary to be attended to besides the quality of the grain, and one of these is to guard against bringing with it the weeds incident to the country or fields where it has grown: for want of attention to this, there are farmers who have introduced into their fields, along with the clover they sowed, the narrow leafed plantain, which arrogates to itself a place which would otherwise be occupied by clover, to the detriment of his hay both in quality and quantity, and that more serious curse, Bensalem clover or white dailsy; all this is the result of their not taking sufficient care in the selection of their clover seed.

In the British Islands, their Oats and Barley fields at some seasons, are entirely yellow; nothing is to be seen save the bloom of the wild mustard, in some districts called Sheldrieks; and this is not the only one of this class of yellow flowering spring weed,—in Wheat they have what is here called Cockle, the seed of which is detrimental to superfine flower; all these should be guarded against by the European agent; and to prevent mischief, the seed after it arrives here should be sifted in a sieve that will separate the weeds from the pure grain, always collecting and burning the obnoxious seeds.

In proof of the sincerity, that the writer entertains a favorable opinion of this system, he will import for next season's sowing, one hundred bushels of selected Barley, one hundred of each variety of Oats, already spoken of, and, it being too late for receiving wheat for the ensuing sowing, measures will be taken for bringing to this country wheat for the following year.

Such persons as take an interest in renewing their seed grain, are invited to apply to the subscriber who will furnish them with any quantity, not less than a bushel. The cost will be governed by the price abroad, and the expense of bringing the articles here. The transaction will be attended with considerable trouble, and the limited extent of the operation will satisfy all who reflect, that there are other motives for undertaking the business than that of making money.

Letters post paid, will be duly attended to, addressed to

JAMES RONALDSON.

No. 200 south Ninth-street, Philadelphia.

P. S. Editors of newspapers who take an interest in the advancement af our agriculture are requested to insert the preceding in their papers.

From the Chicago (Illinois) American.

THE WESTERN "BARRENS."

Barrens are a species of country of a mixed character, uniting forest and prairie. They are covered with scattering oaks, rough and stunted in their appearance, interspersed with patches of hazel, brushwood, and tough grass. They appear to be the result of the contest which the fire is periodically continuing with the timber. The appearance of this description of country led the early settlers of the State to suppose that the scantiness of timber was owing to the poverty of the soil; and hence the title, thus ignorantly given, and calculated to convey erroneous notions to our eastern farmers became of universal application to this extensive tract of country. It is ascertained, however, that these *barrens* embrace as productive a soil as can be found in the State—healthy—more rolling than the prairies, and abounding with that important requisite to desirable farms, good springs. The fire visits these barrens in the fall, but owing to the insufficiency of the fuel, is not able to destroy, entirely, the timber. The farmer may settle, without hesitation or fear, in any part of this species of land, where he can find timber sufficient for his present purposes and wants, for the soil is supposed to be better adapted to all the interests of agriculture, and the vicissitudes of the season, than the deeper and richer mould of bottom and prairie land. Where the fire is prevented from the ravages, (as it easily can be by the occupant of the soil,) heavy timber springs up with a rapidity which would be incredible to the northern emigrant. High insulated *bluffs*, of a conical form, and exhibiting the appearance of connected ridges, rise up from the bottoms along the rivers which meander and fertilize them; they are from one to three hundred feet in height. *Knobs* of land, stony, and often rocky, at their summits, are found along the rivers, in some sections of the State, separated by deep ravines. The prairies are often intersected by ravines leading down to the streams. Deep sink holes, which serve to drain off the waters, are found in some parts, and prove that the substance is secondary limestone, abounding in subteraneous cavities. Very little that is denominated in the eastern States *stony* ground is found in this State. There are quarries of stone in the bluffs, in the banks of the streams, and in the ravines. In the vicinity of Juliet, and many other promising villages, an abundance of stone can be procured, admirably adapted to the purposes of building, uniting durability with great beauty and warmth. *Timber*, were it *equally* distributed in this State, would be adequate to the necessities of the settlers. Its apparent scarcity, where the prairie prevails, is not to be so great an obstacle to settlement as has been generally imagined. Substitutes have been found for many of the purposes to which timber is generally applied: and the rapidity with which prairie, under the hand of care and cultivation, becomes converted into forest of timber, affords a sure guaranty for the future.

The kinds of timber most abundant in the State are oaks of the various species, black and white walnut, ash of the several varieties, elm, sugar maple, honey, locust, hackberry, linden, hickory, cotton-wood, pecan, mulberry, buck-eye, sycamore, cherry, box, elder, sassafras, and persimmon. In the southern and eastern parts of the State, yellow poplar and beech may be found. Near the Ohio are cypress trees, and in several counties clumps of yellow pine and cedar. On the Calumet, near the south end of Lake Michigan, is a forest of small pine. The underwood growth consists principally of redbud, pawpaw, sumach, plum, crab-apple, grape-vine, dog-wood, spice bush, green-brier, hazel, etc. The trees in this State are very luxuriant in their growth, and are frequently found of a stupendous size, particularly the cotton-wood and sycamore, on the alluvial soil of the rivers.

From the United States Gazette.

BEET SUGAR.

To J. R. Chandler, Esq.—Sir: Perceiving by the many applications made to me for information respecting beet sugar, that not only a very general interest prevails on the subject, but also some very erroneous views, I take leave, through your wide circulating paper, to publish a few of my ideas thereon, being the conclusion I have come to, after numerous experiments, as well as from information I have obtained from the most scientific French authorities.

1. An establishment will not clear its expense unless it be calculated to manufacture at least from two to five hundred pounds of sugar per day, so that the idea of individuals in this country manufacturing profitably for private consumption is preposterous; their sugar would stand them, including labor, a dollar per pound.

2. The greatest advantage will be derived from steam power, which will accomplish three objects at least, viz.: first, the rasping of the beets; secondly, the reducing of the liquor "in vacuo;" and thirdly, the boiling of the syrup without the risk of burning it, of which the beet syrup is in much greater danger than the cane syrup; the proof of the former being some degrees higher than that of the latter.

3. The juice of the beet decomposes in the summer in this country in less than two hours. I have known the visced fermentation commence in twenty minutes.—When this once occurs, sugar can never be obtained from it: in a large establishment in this country, it must be prevented by chemical agents.

4. Not only must the acid be neutralized, but the mucilage must be chemically coagulated, the cerate decomposed, and the malate of lime extracted, or the crystalizing will be rendered extremely difficult, if not totally impracticable in many cases, and good sugar will never be made.

5. I am persuaded the refining process can be profitably united to the manufacture of the raw sugar.

6. The profits are incredibly increased in proportion to the extensiveness of the establishment, but no one ought to engage in this business who has not *mind*, as well as a capital.

7. One half of the manufacturing expenses will be saved by a scientific arrangement of the apparatus, so as to dispense with, as much as possible, manual labor.

8. Understanding from various farmers within from ten to twenty miles of this city, that they are perfectly content with about twenty or twenty-five dollars per acre's produce, and as each acre ought to yield on an average 40,000 lbs. of beets, which will produce 2400 lbs. of sugar, I have made the following estimate. Supposing the apparatus to be capable of working only about 100 lbs. of sugar per day, it would

take twenty-four days to manufacture 2400 lbs. of sugar.

EXPENSES.

One acre of beets (40,000 lbs.)	$25 00
Two men for 24 days,	48 00
Two boys for do.	22 00
Fire and rent, &c.	40 00
Total,	$135 00

RECEIPTS.

Quantity of sugar from the acre of beets, would be 2400 lbs. which at ten cents per lb. would be	$240 00
Beet cake and molasses, &c.	20 00
Total,	$260 00
Expenses,	135 00
Profits,	$125 00

By this general statement it will be perceived that there will be nearly cent. per cent. profit; but then the interest of the capital sunk in the purchase of machinery is not included. On the other hand, the two men could work twice or four times as much, and the apparatus for the increased quantity cost very little more.

If you think these remarks worth publishing, you are welcome to them, and I am, sir, your very obedient servant.

W. W. Sleigh.

Hamilton Village, cor. of Cedar Lane. September 30, 1836.

From the Farmers' Register.

ECONOMICAL METHOD OF KEEPING HORSES.

BY HENRY SULLY, M. D.

Having received innumerable letters from gentlemen who keep horses, requesting a description of my plan of feeding, I shall save much trouble both to others as well as myself, by laying my system before the public. Having pursued the plan above 17 years, I am enabled to appreciate its full value, and, being perfectly satisfied of its superior excellence, I hope to continue the same as long as I keep horses.

Most people who know me will allow, that horses in my employ enjoy no sinecure places, and few people can boast of their cattle being in better working condition or more capable of laborious undertakings than mine.

The loft above my stable contains the machinery for cutting chaff and grinding corn. From this loft each horse has a tunnel of communication with the manger below, and a tub annexed to each tunnel in the loft for mixing the ingredients composing the provender.

There should be no rack in the stable, because this may tempt the groom to fill it with hay, and thus by overloading the horses' stomach, endanger his wind, to say little of its expense and waste, for it is a well known fact, that if a horse has his rack constantly replenished with hay, he consumes and spoils upwards of 30 lbs. per day.

The manger with which the tunnel communicates should have cross-bars, of firm oak, placed at the distance of ten or twelve inches from each other, to prevent the horse from wasting his provender in search of the grain it contains, and this space between the cross-bars, allows the horse plenty of room to take his food.

The chaff cutter I make use of, is manufactured by Mr. Wilmott, a very ingenious mechanic, who resides about five miles from Taunton, on the road to Wiveliscombe. He also provides corn bruisers, of the best construction, and any person keeping three or four horses, will save the prime cost of his machinery the first year of his trial, and the horses themselves, thus fed, to use the language of horse keepers, will always be above their work.

When the provender is thoroughly mixed in the tub, previously weighing out each ingredient, the mixture should be given in small quantities at a time, many times a day; and at night, enough is thrown into the tunnel to last till morning. This process will be found of very little trouble to the groom, who will only have to go into the loft six or eight times a day. As the component parts of the provender are weighed separately for each horse, we are certain he has his just proportion; and I have hereunto annexed my scale of feeding in four classes, for it sometimes happens that some of the ingredients cannot be procured, and at other times that it may be better to substitute others; but, whatever grain is given, it should always be bruised or coarsely ground, and carefully weighed out; for by weight alone, is it possible to judge of the quantity of farinaceous substances the horse consumes; it being well known that a peck of oats varies from seven to twelve pounds; consequently if the provender were mixed by measure there would be frequently an uncertainty as to quantity.—Wheat varies from 16 to 12; Barley, from 13 to 16; Peas, from 17 to 15; Beans, from 17 to 15 per peck. And as wheat, beans, peas, barley, and oats, are equally good, and of very trifling difference in price when their specific gravity is taken into consideration, I am equally indifferent which grain I use, but I should always prefer boiled or steamed potatoes for hard working horses, to be a component ingredient, whenever they can be procured.

As I call all ground or bruised grain of whatever description, *farina*, it will be so distinguished in the following

SCALE.

	Class 1	Class 2	Class 3	Class 4
Farina, consisting of bruised or ground peas, wheat, barley, or oats,	5 lbs.	5 lbs.	10 lbs.	5 lbs.
Bran, fine or coarse pollard,	—	—	—	7 lbs.
Boiled or steamed potatoes, mashed in a tub with a wooden bruiser,	5 lbs.	5 lbs.	—	—
Fresh grain,	6 lbs.	—	—	—
Hay cut into chaff,	7 lbs.	8 lbs.	10 lbs.	8 lbs.
Straw, &c. in chaff,	7 lbs.	10 lbs.	10 lbs.	8 lbs.
Malt dust, or ground oil cake,	—	2 lbs.	—	2 lbs.
Salt,	2 oz.	2 oz.	2 oz.	2 oz.

By the above scale it will be seen, that each horse has his 30 lbs. of provender in 24 hours, which, I maintain, is full as much as he can eat. The two ounces of salt will be found to be an excellent stimulus to the horse's stomach, and should, on no account, be omitted. When a horse returns from labor, perhaps the groom will see the propriety of feeding him from his tub more largely, in order that he may be the sooner satisfied, and lie down to rest.

Whenever oat straw can be procured, it is generally preferred; and some like to have it cut into chaff without thrashing out the oats; but this is a bad plan, for in preparing a quantity of this chaff, unequal proportions of oats will be found in each lot, so that one horse will have too large a portion, whilst others have less than they ought, although the portions are accurately weighed.

The only certain method, then, is, to let the grain, of whatever description, be weighed, separately from its straw, and the keeper of cattle will soon satisfy himself that his cattle are in want of nothing in the feeding line. Many people object to potatoes, and think them unfit for working horses; but, from many years' experience, I am enabled to recommend them as a constituent part of the 30 lbs., and am convinced, that it is as wholesome and nutritious a food as can be procured for laboring horses, which are called upon sudden emergencies to perform great tasks, as has been abundantly proved by Mr. Curwen, M. P., who kept above one hundred horses on potatoes and straw, and always found that their labors were conducted better on this than any other food. See Curwen's Agricultural Hints, published 1809.

Wiveliscombe, Somerset, Sept. 12, 1836.

From the London Gardener's Magazine.

OBSERVATIONS AND EXPERIMENTS ON THE PROPERTY POSSESSED BY SOME PLANTS, PARTICULARLY THE A'RACHIS HYPOGÆ'A, [GROUND PEA] OF RIPENING THEIR FRUIT UNDER GROUND.

There are some plants that have the singular property of ripening their fruit under ground, which are distinguished by botanists by the name of Hypocarpogeæ. Why nature has provided them with this property is not known; but it has been supposed to be similar in its uses to that possessed by some other plants, which, though they ripen their seeds in the open air, are guided by nature to deposite them only in the places most suitable to their germination and developement; by which means species are propagated that it would be difficult in any other manner to preserve. Even the Linaria Cymbalaria would soon become rare, did it not throw out its branches, and open its capsules over those fissures of the walls on which it grows, which are suitable for the protection of the young plant; whereas, if its seed fell on the ground,

it woule be placed in circumstances so unfavorable to its germination, that it would probably perish. Without some such provision, how could steep rocks be so frequently covered with cyclamens, &c?

There are plants, however, growing in situations where no particular provision of nature is required to prevent them from perishing, which yet form their fruit under ground; or, at least, bury it in the earth to bring it to maturity: though in what way this is effected, and how the earth operates upon the fruit, as far as I know, has never been explained.

To solve this difficulty, or, at least, to throw some light on the subject, I determined to cultivate the A'rachis hypogæ'a, a plant which, perhaps, possesses the quality in question in a greater degree than any other. I had thus an opportunity of making observations and trying experiments, the result of which I shall proceed to state, first giving a short description of the general habits of arachis, which will facilitate the comprehension of the subject.

The A'rachis hypogæ'a, or earth nut, is one of the Leguminaceæ. It was brought to England in 1712, and it is here considered a stove plant. It is generally cultivated in the warmer parts of North and South America, but is supposed to be originally from Africa. In South Carolina, the seeds are used as chocolate; in the eastern countries, as almonds; and in Cochin-China, they furnish an oil used for lamps, and as a substitute for the oil of olives. About Paris, it is raised on hot beds, and transplanted into the open garden, where it ripens its seeds, which are used as other legumes. It has also been brought to maturity in a stove in England, and proved very prolific.—[See Hort. Trans., vol. v. p. 372.]

The greater number of the flowers of the arachis originate in that portion of the stem which is nearest to the surface of the soil; some, however, are to be found a little higher up, in the axils of the leaves. The calyx of these flowers forms a tube at the lower end, which resembles a peduncle. The style is enclosed in it, and it terminates in a little ovary, at first sessile, and placed at the base of the tube. After being fecundated, the flower withers and falls off, and a small tubercle is found adhering to the stem, which by degrees, assumes a longer shape, like that of a little horn, and turning downwards, penetrates into the soil, or sinks deeper, if it has already entered it. This little horn (which is nothing more than the fecundated seed attached to a peduncle) increases in the earth, becoming larger towards its point, till, by degrees, it assumes the appearance of the legume, or seed-pod, of the arachis.

From knowing that, in general, the parts of plants which are under the soil are either roots themselves, or are furnished with fibrils, and that they can only derive nourishment from the soil by their spongioles, the idea struck me, that the fruit of the arachis might have an analogy with roots, or might exercise a similar function in some degree: and I very soon, by observing the plant attentively, discovered even with the naked eye, a small tubercle on the extreme point of each logume, which on examining it with a glass, and afterwards with a microscope, I found to be analogous with, though it was much more distinct than the spongiole of a root. This is more apparent when the pod has penetrated the ground, and begins to develope itself, decreasing in thickness as the seed which it contains approaches maturity From the point where the tubercle, or spongiole, appears, there are sallent lines, which mark the legume longitudinally; and which appear to be formed of small bundles of vessels, or of elongated cellules.

These observations apply, not only to the arachis, to which new and suitable organs of absorption are necessary for its re-production, but to the bulb of the saffron, which essentially differs but little from seed, and which is known to throw out large fusiform roots from its base; a circumstance that I consider to afford additional support to my opinion.

Subsequent experiments have confirmed the opinion which the above observations first led me to entertain. By means of a stone placed under the legume, it was prevented from penetrating into the ground, when it was found to become elongated, and to try to change its direction; but, finally, not being able to reach the earth it withered and dried up. This convinced me that the legumes of the arachis can never be ripened in the open air.

I put another pod of this plant into a small empty phial, and set it in a place where it could not receive the direct rays of the sun. It is easy to comprehend that, while it was in this situation, the atmosphere within the phial was always moist; as, during the warm days and cool nights of autumn, the moisture combined with the air in the day becomes condensed in the night; and, in fact, the interior of the phial was found every morning covered with drops of water. The legume was therefore, all night, and a great part of the morning, not only in an exceedingly moist atmosphere, but also completely battered by these watery drops. This kept it growing: it elongated itself, without appearing injured in doing so; and when, in the course of about a fortnight, I took it out of the phial, I found that it was still in a fit state for penetrating into the ground. A third pod, when immersed in water, became covered with a whitish film; but it lived and elongated itself, becoming somewhat thicker towards the point. I took it out of the water at the end of three weeks, and found that it had still power to search for the earth The last two experiments prove that, although water is not sufficient for the full developement of the fruit, it is favorable to the preservation of its vitality; and that, though moisture is a condition necessary to the production of the tubercles, or roots, it is not sufficient in itself to produce them so as to enable them to exercise their functions, when all other circumstances are unfavorable.

I put another legume into a phial, in which there were a few drops of water, and buried it in the ground, so that the light could not reach it. In this situation, it soon became very long, and covered with fine hairs towards its extremity, where a swelling gradually took the form of a small legume. In a few days, the hairy covering disappeared, and the mimature ovary slowly increased in size. I took the legume out of the bottle about the time when it would have become ripe if it had been in the ground, and found it very small, with the point much elongated, and furnished with spongioles, but with only one seed, which was very small and watery. In this experiment, the legume was placed in circumstances much more favorable for the developement of the functions of its roots, than it was in the preceeding ones; because, in this case, the legume was kept in an atmosphere constantly impregnated with moisture, and, what was particularly suitable to it, in perfect darkness. But why did it become covered with hair? It is well known that hair, in some cases, acts as an organ of absorption; and it is probable that, in this instance, it exercised the same functions as, and partly supplied the place of, the spongiole, which, though formed, was, from the unfavorable situation in which it was placed, incapable of performing its proper office effectively: and, indeed, the hairs disappeared as soon as the extreme point of the legume became sufficiently elongated to touch the bottom of the bottle, where, as I before stated, there were some drops of water, in which the spongiole could, though only in an imperfect degree, exercise its proper functions.

Finally, I cut off the extreme points of three legumes, and afterwards their spongioles, which were scarcely formed; and, after having done this without injuring any other part of the pods, I put them in the ground again, and let them remain about a fortnight. I then examined them, and found that two of them were dried up, and had become soft, and almost decayed. This would have proved that the spongiole was essential for the developement of the fruit, had not the third legume, which was treated exactly like the others, vegetated, and increased in size! What was the cause of this? On observing it closely, I discovered that it had still a spongiole, although the two others had not the least appearance of any; and this explained the phenomenon; as it appeared clearly, that either I had not entirely removed the spongiole, as I intended, or that the plant possessed the power of reproducing it.

From all these experiments, I think we may conclude that the fruit of the A'rachis hypogæ'a is placed by nature under ground and in order to absorb from the earth something that is necessary for its developement (which may be only water,) and that darkness is a necessary condition. Also, that probably all plants belonging to the Hypocarpogeæ are furnished with similar organs for similar purposes; which I consider a reasonable inference, till it has been either confirmed or disproved by future observations and experiments.

There lately set out from Nancy, for Egypt, a little agricultural colony, destined to establish in the environs of Cairo an experimental farm upon the plan of that at Roville. A considerable quantity of implements of husbandry have been purchased by the viceroy.

Fair of American Institute.

(Continued from p. 360.)

Andrew Luke, Broadway, for a cider mill. *Diploma.*

S. Kibbe, Esperance, Schoharie connty, New-York, for one cheese press. *Hiploma.*

Bates, Hyde & Co., Bridgewater, Mass. for a hand cotton gin. *Diploma.*

T. & N. Sawyer, 235 Bleecker-street, for an improved copper pump for wells and cisterns. *Silver Medal.*

John Burt, Tall River, Mass., for a patent self adjusting water wheel, manufactured by J. S. Anderson, 163 Chapel-street. *Diploma.*

E. Whitfield, William-street, for a frictionless pump. *Diploma.*

Thomas C. Barton, New-Jersey, for a forcing and suction pump. *Diploma.*

Erastus A. Holton, Westminister, Vermont, for a hoop shaving machine. *Diploma.*

A very useful apparatus for coopers.—With proper attendance it is said that 1000 hoops a day can be turned out.

The machine costs but 12 or 15 dollars, and we should think would save its cost in a short time.

Isaac Wiltberger, 47 Robinson-street, for a machine for corking bottles. *Diploma.*

Charles Parke, 71 Hammersly-street, for a rope serving machine. *Diploma.*

A. B. Smith, 7½ Bowery, for a watch clock. *Diploma.*

Henry Sperry, 204 Bowery, for a specimen of eight day clocks. *Diploma.*

Erastus A. Holton, Westminister, Vermont, for a portable grist mill and vegetable cutter. *Silver Medal.*

The advantages of the vegetable cutter to farmers will be great. A boy, we are told can cut two bushels of potatoes, or turnip per minute, leaving the pieces ¼ of an inch thick.

Ira Gay, Nassau, New-Hampshire, for a sash planing machine. *Diploma.*

W. H. & S. Nichols, 252 Water-street, for a pair of scales of good workmanship. *Diploma.*

E. & T. Fairbanks & Co., St. Johnsbnry, Vermont, for a platform scale. *Diploma.*

Wm. R. Nevins, corner Greenwich and Christopher-streets, for a model of a biscuit machine. *Diploma.*

Cornell Machine Company, office 180 Broadway, for the best stave machine. A Gold Medal having been awarded last year. *Diploma.*

Decidedly the best stave machine in the country. There is the least possible waste of stuff, while the staves are very neatly finished. In a former number of this work we have given cuts and description of the machine to which we refer.

No one having timber of the proper sort, and spare power, should be without this machine, it would return a very handsome profit.

H. & C. Ripley, West Springfield, Mass., for the 2d best stave machine, first time exhibited. *Silver Medal.*

Another stave machine on an entire different principle. It is more simple than the last, but it appears to us that the saw is of a shape, and size, difficult to make; the waste of stuff considerable, and the consumption of power great, while the staves are not delivered in a smooth state.

In many situations however its superior portability, and simplicity, might render it very desirable.

American Hydraulic Company, for a rotary pump, Wm. C. Wilcox, agent. *Diploma.*

James Maxwell, 259, Bowery, for a self feeding corn sheller. *Diploma.*

Duncan & West, 2 Little Green-street, for one patent mangle. *Diploma.*

Thomas Blanchard, New-York, for a new method of boat fastening. *Diploma.*

A curious invention. A boat was exhibited that had been in use for two years in our harbor, the sides of which were only *three sixteenths of an inch thick*, and through which *we thrust a pin.*

Sockets are fastened upon the sides, through which a transverse iron wire is passed giving the shape to the boat—the sides are strung, as it were, upon this, and secured by a screw and nut on the gunnel.

A boat so constructed, can be taken apart and put together, using only a screw wrench. This boat has an advantage in being able to resist all twisting or blows upon the side, reminding one of a basket, rather than a boat.

This and the following invention, designed to remedy some of the defects of the common circular saw, are both contrivances of the fertile brain of Mr. Blanchard.

Thomas Blanchard, New-York, for a model of a circular saw mill. *Diploma.*

Daved M. Cradit, Ithaca, New-York, for a lathe cutting machine. *Diploma.*

The advantages proposed to be gained in this lath cutter, are the rapidity with which they can be made—the saving of stuff, no saw being used, and the superior quality of the lath. Cross grained, or knotty wood, works up well in this machine.

A. F. Bright, Onondaga county, New-York, for a washing machine. *Diploma.*

H. Huxley, 79 Barclay-street, for a hand power corn sheller. *Diploma.*

J. R. Newell, Boston, Mass., for a knitting machine. A Gold Medal having been awarded last year. *Diploma.*

A very pretty and ingenious knitting machine, on which caps, stockings, shirts or drawers can be wrought, as well as suspenders and other narrow articles. The operation is a beautiful imitation of hand knitting.—The contrivance by which the delivery of the yarn is regulated is very ingenious.

We are afraid that the knitting ladies will look upon this as a formidable rival.

George Swan, Oneida county, for a patent forge back. *Silver Medal.*

Herrick Aiken, Dracut, Mass., for a leather splitting machine. *Diploma.*

Robert Rankin, Baltimore, Maryland, for a machine for moulding bricks. *Diploma.*

Thomas H. Dollay, for a naval fid for stretching straps for blocks. *Diploma.*

P. N. Pease, Brainbridge, New-Jersey, for a model of a machine for threshing clover. *Diploma.*

S. Spinning, Eighth-street, for a machine for cutting sausage meat. *Diploma.*

J. S. Shuler, Lockport, New-York, for a straw cutter. *Silver Medal.*

Greenleaf, Shepard & Cumberland, Paris, Oneida county, New-York, for a rotary steam engine. *Silver Medal.*

A rotary engine not differing (as far as we can perceive) in principle from most others. Its action was very pretty, and the power over it, as to stopping and reversing complete. We did not have an opportunity of seeing it while attached to one of the saws.

Warren P. Wing, Troy, New-York, for a mill bush and lubricator. *Diploma.*

P. Williamson, Division-street, for a model of a newly invented sofa and settee bedstead. *Diploma.*

John C. Blauvelt, Rockland county, New-York, for a stone eradicator and grind stone. *Diploma.*

Paul Stilliman, for a model of a steam engine. *Diploma.*

Two working models and one miniature model of steam engine—the working models, very well made.

Henry H. Storms, 47 Robinson-street, for a steam engine. *Diploma.*

John M. D. Keating, Peck-slip, for a miniature model of a steam engine, weighing 3 ounces.

John Landmark, 3 Roosevelt-street, for a fine lemon squeezer. *Diploma.*

Curtis, Babbitt & Stafford, Utica, New-York, steam hydraulic engine. This is an apparatus for raising water by the application of steam for the purpose of using the water when so raised as a water power applicable to an ordinary over-shot or other wheel. The examination of this process—which has been in operation during the Fair, has excited a deep interest. The committee in their endeavor to arrive at a just conclusion as to the utility of this ingenious contrivance, have availed themselves of the suggestion of several scientific gentlemen who attended the fair. Its operation would seem to promise valuable results—at the same time, the committee find that no means existed, owing to the hasty manner of putting the machine in operation, of truly testing the power and quantity of steam used in raising and supplying a given quantity of water. While, therefore, the committee are not prepared to say that by this arrangement a greater effect can be produced in propelling machinery by using water as an intermediate agent, than by the direct application of the steam itself,—they cannot deny but such may, on a more thorough test, prove the result. Without therefore giving a decided opinion, and recommending the

invention of this mechanical arrangement by a premium, on the part of the Institute, the committee regard this effort evidence of great genius and as giving such high promise of ultimate beneficial results, as to warrant the continued perseverance of the enterprising and scientific gentlemen, who have so laudably embarked in this enterprise.

The judges had not sufficient data for ascertaining the economy of this machine—it appeared to us a revival of the Margins of Worcester's first method of using steam.

SIGN PAINTING AND IMITATIONS OF WOOD AND MARBLE.

Kennedy & Alford, 505 Grand-street, for the best specimen of manuscript sign painting. *Diploma.*

John Gibbs, 151 Front-street, for the best specimen of ordinary sign painting *Diploma.*

John J. Roach, 76 Cedar-street, for a block letter sign, (American Institute.)—*Diploma.*

W. & J. Gibson, Bowery, for the best specimens of imitation wood and marble, ground glass, damask, and silk tapestry.—*Silver Medal.*

The imitations of wood are the finest we have seen, excelling in beauty the common specimens of the wood itself.

The marble was likewise very well done.

John Frost, 50 Roosevelt-street, for specimens of ornamental sign painting and imitations of marble. *Diploma.*

Imitations of marble on glass—a very good idea, and very neatly executed. The deception is perfect.

MATHEMATICAL AND PHILOSOPHICAL INSTRUMENTS, &C.

E. N. Byram, Sag Harbour, Long Island, for the best large orrery, or planetary machine. *Gold Medal.*

We have understood that this orrery is the work of a young man, disabled for many years in his lower extremities, and who, without any of the usual instruction, constructed this suspended orrery—a most ingenious piece of mechanism.

Brown & Francis, 252 Broadway, for the best orrery, tellurian, and models of the human eye, for the use of schools. *Diploma.*

The school apparatus, designed to carry out the more improved systems of education, now adopted in our seminaries, will prove a powerful auxiliary to the well informed teacher.

The workmanship is good, and the prices are moderate.

Brown & Francis, 252 Broadway, for the best electrical machine, and air pump. *Silver Medal.*

The electrical machine was very well made—the air pump, as far as we could judge from inspection, a very creditable article. It has a very great advantage in combining the exhausting and condensing power in the same machine.

Doct. Jonas Humbert, junior, 14 Roosevelt-street, exhibited a magnificent electrical machine, which attracted great attention, and was almost continually surrounded by crowds of admirers. This machine, with the accompanying apparatus, was constructed, and is employed for medical purposes. Doct. Humbert deserves the thanks of the committee for his enterprise and ingenuity in getting up this costly and useful apparatus, so appropriate to the purposes for which it was intended.

Dr. Humbert was decidedly the most popular man at the fair.

John Roach, 4 Wall-street, for the best specimen of thermometers, barometers, and surveyor's compasses. *Silver Medal.*

Mr. Roach's instruments are characterized by great neatness and accuracy of construction.

His barometer we have heard highly praised—he uses a glass cistern, thereby ensuring a correspondence between all his instruments, a point of vital importance in meteorological observations.

Timpson & Swan, 259 Water-street, for the 2d best specimen of surveyor's compasses. *Diploma.*

Mark E. Swain, 67 Division-street, for a specimen of glazier's diamonds, for cutting glass, and surveyor's chains. *Silver Medal.*

The chain we considered a very fair piece of workmanship.

GLASS AND EARTHEN WARE.

Cut glass is one of the most elegant of modern luxuries, and the specimens exhibited were beautiful—we particularly admired the taste displayed in the form and pattern of the various articles.

The stone ware, also displayed a variety of substantial vessels.

Joseph Baggott, Liberty-street, for the best specimen of cut glass and cutting.—*Silver Medal.*

Bonnell & Bradley, 149 Broadway, for the 2d best specimen of cut glass and cutting. *Diploma.*

Michael Lefaulon, Salamander works, for a beautiful specimen of stone ware. *Diploma.*

MISCELLANEOUS.

R. & W. Robinson, Attleborough, Mass., for a most splendid specimen of buttons.—*Gold Medal.*

These buttons are well characterized in the catalogue as splendid; the beauty of these patterns, added to the richness of their finish, will go far to render them fashionable.

D. Berrian, 357 Pearl-street, for a beautiful specimen of brushes and bellows.—*Silver Medal.*

Mr. Berrian has certainly displayed great ingenuity and taste in this line. No articles belonging to the household and toilet, comes more frequently under the eye than the brush, and neatness of form is consequently a great commendation. If any one will take the trouble to count up the various brushes in use about him, he will be astonished at the number—we were truly so when first called to notice it. Among others we consider the flesh brush in itself a complete medicine chest, and as indispensable as a hair brush.

Johnson & Co., cor. Cedar and William-streets, for the best specimen of perfumery, Cologne water and fancy soaps. *Silver Medal.*

Josiah Burton, 390 Pearl-street, for the best specimen of confectionary articles.—*Diploma.*

T. G. Hodgkins, 49 Courtland-street, for the 2d best specimen of confectionary articles. *Diploma.*

Benjamin Sherwood, 321 Fourth-street, for the best specimen of fire proof safe or chests. *Silver Medal.*

Truly a safe. This was one of the first articles at the fair that attracted our attention.

We have always considered a double chest as the true form for protection against fire. The communication being only established in two points, and the interior of the outer chest being a very bad conductor of heat, the most perfect degree of safety is attained. A chest was exhibited which had undergone a severe heat in a furnace.

At the end of the article, we shall give an account of the experiment in the inventor's iron works.

Jesse Delano, 97 Water-street, for the 2d best specimen of fire proof iron chests.—*Diploma.*

T. W. Whitley, Paterson, New-Jersey, for an improved window sash and show case. *Diploma.*

Robert Morrison, 159 East Broadway, an apprentice, for a small mantle piece. *Silver Medal.*

Mrs. Susan Newell, 64 Gold-street, for a specimen of flags. *Diploma.*

Mrs. C. Pierson, 124 Nassau-street, for a specimen of flags. *Diploma.*

U. Warren, 350 Houston-street, for one septanataria table top. *Diploma.*

A very rich piece of furniture—the border was of Scagliolia.

Henry Durell, 216 William-street, for specimens of metallic combs. *Diploma.*

Ward & Bell, 227 Washington-street, for the best specimen of preserved birds. *Diploma.*

Mrs. S. Little, 440 Washington-street, for the 2d best specimen of preserved birds.—*Diploma.*

E. Guillanden, for fine specimens of preserved birds. *Diploma.*

William McDougal, 85 Sullivan-street, for a specimen of repairing china or earthenware. *Diploma.*

New-Haven Verd Antique Marble Company, New-Haven, Conn., for fine specimen of marble, (a chimney piece.) *Silver Medal.*

No country can vie with ours in beauty and variety of marble. The discovery of this quarry is of recent date—and the marble bids fair to come into general use.

The chimney piece attracted universal attention.

Mrs. Gould, 1½ Ann-street, for fine specimen of pickles. *Diploma.*

Mrs. Gould seemed determined to make our mouths water, crowds stood admiring the tempting display of sour luxuries.

Harris & Wynans, 65 Canal-street, for fine specimens of paper hangings. *Silver Medal.*

E. & S. S. Rockwell, 192 Broadway, for fine specimens of vault lights. *Silver Medal.*

If any one has had the misfortune to slip upon, or fall though one of the old fashioned vault grates, (and who has not,) he needs no recommendation of this neat and popular light.

Henry Hannington, 290 Broadway, for a variety of splendid transparencies. *Silver Medal.*

Mr. Hanningtons luminous conceptions are well known to every inhabitant of Gotham.

John McCoy, apprentice, 205 Duane-street, for one cedar pail of superior workmanship. *Diploma.*

Robert Lawrence, apprentice, 205 Duane-street, for one cedar pail of superior workmanship. *Diploma.*

J. B. Roberts, 452 Broadway, for fine specimens of chimney tops. *Diploma.*

Barnard Slate Company, Bangor, Maine, Walter Janes, agent, for a fine specimen of slate. *Silver Medal.*

Joseph Richards, 175 Broadway, for fine specimens of gold spectacles. *Diploma.*

Robert Usher, 513 West-street, for fine specimens of preserved beef and hams.—*Diploma.*

Boardman & Hart, 6 Burling-slip, for superior specimens of Brittania ware.—*Silver Medal.*

This firm has long been known, and their ware highly esteemed, but we think the pieces of Brittania ware, displayed on this occasion, were finer than any we have before noticed.

Pupils of the Assylum for the Blind, for a handsome specimen of rugs. *Silver Medal.*

Creditable alike to the "blind," and to those benevolent individuals, who have with praiseworthy zeal, give their whole time to the improvement of the condition of their unfortunate brethren.

John Smith, 217 Water-street, for a superior specimen of jappaning. *Diploma.*

Samuel Judd, Water-street, for beautiful specimens of sperm candles. A Silver Medal awarded last year. *Diploma.*

Henry W. Oliver, 280 Division-street, for a portable meat safe. *Diploma.*

Doct. J. Francis, Chambers-street, for a fine specimen of artificial eyes. *Diploma.*

Eyes for the blind, as good in appearance, at least, as the original organ. This branch of manufacture should prosper in those parts of the world where gouging is practised.

Marble Cement Company, 180 Broadway, for fine specimens of marble cement, N. H. Gale, agent. *Silver Medal.*

Not satisfied with the genuine marble, we must have imitation, possessing, however, this advantage, that marble cement can be applied to the exterior of a building, in cases where marble could not be afforded for even a part.

Wm. Chandless, 6 Clarkson-street, for specimens of manufactured German silver. *Diploma.*

Doct. Lewis Feuchtwanger, 377 Broadway, for specimens of German silver in the crude and prepared state, of his own manufacture. *Silver Medal.*

The silversmiths must look to Dr. Feuchtwanger. His display of forks, spoons, ornaments, &c., was very fine—a casual observer would be deceived, and suppose them to be of genuine silver. This composition is becoming daily more popular. For mathematical and astronomical instruments, it is decidedly the best material.

Mr. Morton, for a design of a certificate of membership for the chamber of trade.—*Diploma.*

Martin G. Johnson, Jamaica, Long Island, for specimen of maps executed with the pen. *Diploma.*

Francis Murphy, 756 Broadway, for the best specimen of water proof blacking. *Silver Medal.*

Charles Thompson, 28 Pitt-street, for the 2d best specimen of water proof blacking.—*Diploma.*

W. & J. Crolius, 400 Water-street, for a model of a club boat made from old iron sides. *Silver Medal.*

The beauty of this model together with the association, with the name of Old Ironsides, rendered this an object of great curiosity.

Joseph C. Kent, 734 Greenwich-street, for a model of a boat. *Diploma.*

The Redford Glass Company, for a specimen of window and crown glass, Charles Goff, agent, Maiden-lane. *Diploma.*

Miss Jane Stewart, has exhibited two paintings in oil, viz. a lady in the costume of Charles the Second, and a serenade by moonlight on the lake. Although too late for competition, are considered beautiful specimens.

Mrs. Wm. Niblo, for a superior pumpkin pie, made of the great pumpkin exhibited during the Fair, weighing 140 lbs. *Diploma.*

American Cement Company, for two busts and a lion made of cement, Obadiah Parker, Syracuse, agent. *Diploma.*

Alfred T. Serrell, Sixth Avenue, for fine specimen of ornamental inlaid boards for piano fortes. *Diploma.*

Very pretty workmanship from a young artist—in whose whole family the constructive talent is prominent.

James E. Serrell, Sixth Avenue, for fine specimens of brush blocks. *Diploma.*

S. W. Stockton, Philadelphia, for the best specimen of incorruptible teeth, maxilary bones, skull, &c., and of mechanical dentistry. *Silver Medal.*

These teeth were good substitutes for that necessary apparatus, which from disease or accident we sometimes lose prematurely—but we were partcularly pleased with the skull, showing the provision of nature in reference to the first and second teeth.

We dare to say that many received from it much more correct notions than they formerly entertained in regard to their teeth, even though they are always in their mouths.

CABINET WARE.

Bishop & Breckells, 450 Broadway, for the best sofa bedstead, of superior workmanship. *Silver Medal.*

H. Brunswick, 7½ Bowery, for a sofa bedstead, approved for its design, convenience and usefulness. *Diploma.*

G. & W. H. Jennison, cor. Charlton and Varick-streets, for an improved refrigerator. *Silver Medal.*

A neat piece of furniture, and a most desirable article of household economy—particularly when the thermometer indicates 80° or 90° Fahr.

Brown & Ash, 191 Bowery, for a double action revolving and self acting chair.—*Silver Medal.*

This chair affords facilities for every change of position calculated to relieve the tedium of a sedentary life.

The perpendicularity of the books to the axis of vision is ensured, while the chest can be fully expanded.

Decidedly the greatest luxury to be found in a study.

CHEMICALS, &C.

J. J. Tobin, (Fort Lee Chemical Works,) for the best specimen of chemicals. *Silver Medal.*

Kipp & Cordes, 55 Forsyth-street, for a handsome specimen of starch. *Diploma.*

Wm. Sturdivant, 474½ Broadway, for the best specimen of white sperm oil. *Diploma.*

W. H. & S. Nichols, 252 Water-street, for scales for apothecaries'. *Diploma.*

Jones & McDonald, 83 Fulton-street, for a fine specimen of apothecaries' scales. *Diploma.*

CARVING AND GILDING.

Kreps & Smith, 22 Rivington-street, for the best specimen of gilding. *Diploma.*

Solomon Pancoast, 54 Spring-street, for a fine specimen of polished white and mahogany doors. *Diploma.*

Thomas Godwin, 169 Maiden-lane, for the best specimen of gilding on glass. *Diploma.*

AGRICULTURE, &C.

We are glad to find the Institute paying particular attention to agriculture. The corn of Mr. Johnson was examined on the ground by a committee, several stalks of unusual size were exhibited.

The mammoth vegetable raised our standard of comparison in regard to size. As large as a pumpkin, we shall interpret in a very different manner, after having seen the one at the fair.

The various samples of honey, were quite deserving of notice, the beauty of the article, and the ingenuity displayed in the construction of the hives pleased us much.

Barret Johnson, Brooklyn, Long Island, for a specimen of corn from a field of about 10 acres, on the farm of Gen. Jeremiah Johnson. *Silver Medal.*

Robert Thompson, Flushing, Long Island, for early Dutch drum head cabbages of uncommon growth, weighing from 35 to 42 lbs., each. *Diploma.*

James H. Colyear, Newtown, Long Island, for a bunch of 100 onions, weighing 120 lbs. *Diploma.*

C. Bergen, Brooklyn, Long Island, for specimens of white and red beets of an uncommon large size. *Diplowa.*

N. Cowenhoven, New-York, for a specimen of pound pears, 13 on a twig, of 8 inches in length, weighing 8½ pounds, from his farm on Long Island. *Diploma.*

James Durham, Harlaem, New-York, for an enormous pumpkin, the seeds of which sold for 12½ cents each. *Diploma.*

Charles T. Butting, for an uncommon sized pumpkin. *Diploma.*

David Ruggles, Newburgh, for a specimen of leaves from the Russia mulberry tree, of various years' growth cultivated by him. *Silver Medal.*

Francis Kelsey, Lodi, New-Jersey, for a fine specimen of honey and bees, the honey made from inferior Southern honey, as also an improvement for increasing the quantity. *Silver Medal.*

Levi H. Parrish, for a specimen of patent bee-hives, beautiful, convenient, and well arranged. Considered a meritorious article. *Silver Medal.*

Wilcox & Cone, West Bloomfield, Ontario county, N. Y., for the greatest quantity of first rate honey, part of a lot of 3700 lbs.—*Silver Medal.*

James Van Dyke, Brooklyn, Long Island, for the best specimen of mustard. *Diploma.*

John Spry, 596 Broadway, for the best specimen of flower stands. *Diploma.*

Specimens of ploughs, exhibited by John Weaver, of Maryland, Minor & Horton Peekskill, N. Y., and Andrew Drysdale, sen. of this city, will hereafter be tested by actual experiment, and the result published in the Journal of the American Institute.

CARRIAGES AND SLEIGHS.

In this line there were not many specimens, but they all obtained medals. The miniature carriage, and the sleighs were finished in a superior manner.

Daniel M. Grummon, Newark, New-Jersey, for a child's landau, a beautiful piece of workmanship. *Silver Medal.*

James Flinn, New-York, for a light pleasure waggon. *Silver Medal.*

Robinson & Vanderbilt, Albany, N. Y. for a Stanhope carriage and four sleighs, of superior workmanship. *Gold Medal*

SURGICAL INSTRUMENTS, &c.

Doctor A. G. Hull, 4 Vessey-street, for the best specimen of trusses. A premium having been awarded at three former Fairs. *Diploma.*

Doctor A. G. Hull, 4 Vessey-street, for an utero abdominal supporter. *Diploma.*

James Jones, Providence, R. Island, for a patent relief bedstead for invalids, an invention of great importance to the afflicted.—*Gold Medal.*

These sickbeds were so well liked, that the judges awarded medals to each.

Marcus T. Moody, Northampton, Mass., for an elevating spring bed, highly approved for its simplicity of structure, cheapness, and great utility. *Silver Medal.*

Williams Woolley, 422 Broadway, for an invalid bedstead, possessing many advantages over those now in use. A gold medal having before been awarded. *Silver Medal.*

We saw several articles during the fair, that have not been noticed in the catalogue.

The machine—wrought Stockbridge marble, Clark and Boynton patentees, was among the number; this was brought in too ate for competition for the premium.

The block of marble was in a state ready for use, and as nearly 700 pounds had been lost in dressing, it is easy to imagine the saving in transportation. From the description and cut, on another page, the reader will perceive that the machine is original, and superior in its operation, to that of Hunter, patented in England. There is no danger of breaking off the corners, as in that machine, while more work can be performed in an hour, than a man by hand, can do in a day.

It is also said to leave the surface of the stone in a better state for polishing, than when dressed by hand.

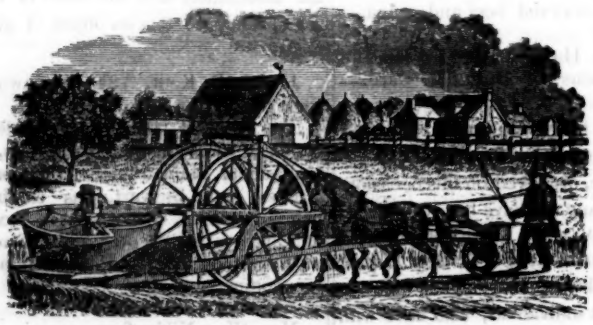
We refer our readers to the figure, and its description.

There was also an ingenious wire cutting, and sharpening machine, by Mr. Thorp, of Cambridge, Mass. This engine is intended for preparing wire for calico printers, and pianoforte makers; is ingenious in its mode of operation, and a great labor saving apparatus.

A few machines would suffice for those purposes in the whole country; though it can be adopted to a variety of uses, of a similar nature.

We also noticed several books, printed for the blind; no label was attached to them, and we do not know whether they were printed in this country, or Europe. If of domestic origin we should have thought them worthy of a notice, at least, if not a medal.

A preparation entitled Vegetable Skeletons, representing the seed vessels, of the Datura Stramonium, cleared of every thing but fibre, was to us an attractive object. The extreme neatness of the preparation, and the beautiful taste of the printed card, gave indications of our unusual talent for nicety, and order. We are entirely ignorant of the exhibitors name or sex. We should think that some thing of female style was shown in the arrangement, but are not certain. This same hand directed by such skill, would produce most beautiful preparations in different branches of natural history.



WILSON'S MOWING AND GRAIN-CUTTING MACHINE.

The above wood engraving represents the machine exhibited by Capt. Alexander M. Wilson, of Rhinebec, for mowing and for cutting grain, by the power of one or more horses, or oxen. It would be needless to attempt giving such a description of this machine as would serve to aid in its construction, as it has been secured to the inventor, by letters patent, and no one will, of course, attempt to construct it without consulting him or his agent; in which case, they will not only examine the machine, but receive the instructions necessary.

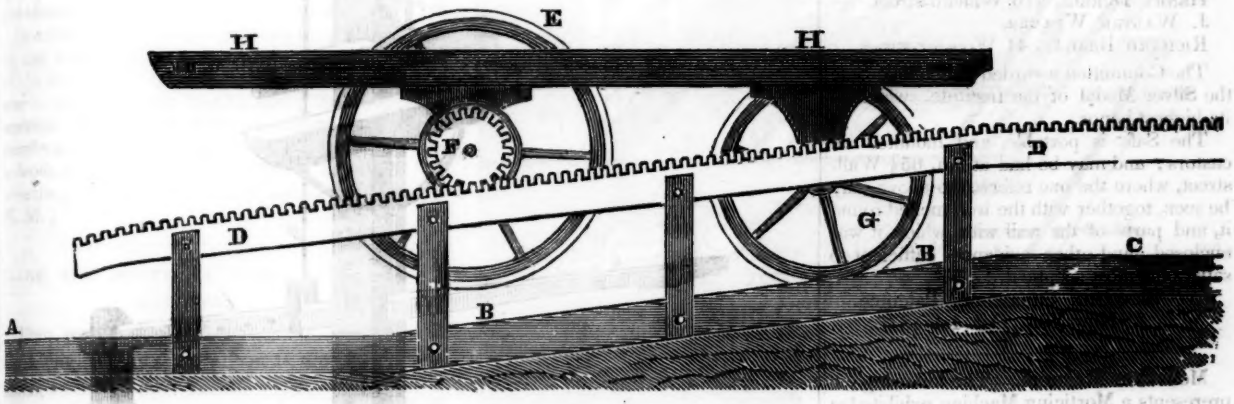
The machine now exhibited, is propelled by two horses or oxen, going in the rear and pushing it forward. It moves on two large wheels similar to the hind wheels of a coach, the axle of which, communicates a rotary motion to a wheel which revolves horizontally, around which are knives projecting from the edge, under such angle as to cut the grass or grain with a constantly drawing stroke, and a superstructure is erected on this cutting-wheel, which carries it out and deposites it in the swarth.

We have not seen this machine in operation, cutting grass or grain, as the place of exhibition, of course, afforded none to cut; but from the testimony of gentlemen

whose veracity and judgment in the case, cannot be questioned, and from the appearance of the machine, we feel warranted in our belief that it cannot fail to mark a new and important era in the system of agriculture. The machine can certainly be propelled forward by a common team, and if it goes forward we cannot see how it can fail to cut the grass or grain, where it is not interrupted by stumps or stones; and if the team walks two miles an hour, and cuts a swarth six feet wide, which is the width calculated, it must, cut a fraction over fourteen acres in ten hours; there being no time lost in sharpening, as the knives are provided with a self-sharpener, which operates when wanted.

The business of agriculture, is the first and noblest employment of the human family, and the two most important labors of the agriculturist are, the cutting the grain to feed himself and his fellow-creatures, and grass to feed his cattle. This labor owing to its vast importance, and the critical time when it must be performed, generally commands a higher price than other agricultural labor; and often, owing to the scarcity of hands at that time, the farmer is put to great inconvenience, and sometimes subjected to loss. With this machine the farmer with one man, and team of horses or oxen, can cut his grass and grain in the time they could be cut by ten men, and one machine would be sufficient for a considerable neighborhood. If this is not one of the most important and valuable improvements in the useful arts, we can scarcely conceive what would be.

The inventor will be found at Rhinebec, Dutchess Co. N. Y., where application may be made, or to George Hanford's, Market Street, Albany.



The above cut represents a new plan of ascending and descending inclined planes upon Railroads. A, B, C, represents the main track of which B, B, is the inclined plane. D. D. represents a rack rail, which is raised above the main track, to a sufficient heigh to receive the pinion or cogg wheel F. The rack rail may be attached to the main track or otherwise constructed, as may be found most expedient; the wheel F, is to be attached to the axle of the running wheel of the locomotive, as the wheel F, runs upon the rack rail, it raises the back of the engine to a sufficient height, that the frame H, H, is kept in a horizontal position, and consequently the water in the boiler keeps the same position in ascending and descending, as though the machine were runn ng upon a level track. G, is the forward wheel of the engine, which runs upon the main track. In ascending or descending, the rack rail should be extended at the summit of the plane, to a sufficient length to drag up the train of cars, and just high enough to let the large wheel E, clear the main track. It appears to me, that engines constructed on the above plan may be made to ascend considerable declivities; it is evident that by decreasing the size of the cog wheel F, almost any amount of power that would be requsite can be obtained; and likewise it is an easy matter to make all planes of the same inclinations.

A Young Mechanic.

B. SHERWOOD'S PATENT PORTABLE REVOLVING SAFE WITHIN A SAFE.

Having tested my FIRE PROOF REVOLVING SAFE WITHIN A SAFE, in the presence of imany witnesses at the Fair of the Mechanics' Institute at Castle Garden, on the ninth day of September, 1836, I think it necessary to give an explanation of the test and its effect:

I built a cupola four feet six inches diameter at the bottom, and three feet six inches at the top, and six feet high; and placed the Safe in the centre, elevating it twelve to fourteen inches from the bottom, leaving a space of twelve to fifteen inches on every side, and underneath, which I filled with charcoal, and placed a large bellows at each side carrying their blasts underneath the Safe; set fire at half past one o'clock and began to blow. At half past two o'clock put into the cupola a quantity of iron, which soon melted down and lodged in the bottom. I kept up the blast until six o'clock, then pulled the cupola to pieces, drew out and opened the Safe, and found it to be safe indeed, for the books were not injured in the least, and although the heat was sufficient to melt the mortar and bricks of which the wall was composed, and the iron between the wall and the Safe, the iron of which the outside of the Safe is made was not injured.

The reason why the iron of the Safe was not injured, is—the composition put in as a non-conductor prevents the fire from affecting it, insomuch that the coals will be black about the Safe for two or three inches, when there is heat enough to melt iron at a distance of eight inches from it. It is evident that the heat endured by my Safe, was far greater than it would have been exposed to had it been in the hottest part of the great fire of December, 1835. For if it had been there, it would have fallen and laid on and amongst the rubbish, and the part that laid down would have been exposed to but very little heat, and it being round, the heat would have passed off without the least injury. It will be remembered, that where the heat is sufficient to melt iron, it must be of short duration, unless supplied with fuel; for, any thing combustible is soon destroyed where there is heat enough to melt iron. It is true, that the fire of December, 1835, continued some days, but not with sufficient heat to melt iron; where the heat was the most intense, the fire was out first. Those iron chests which were destroyed at the great fire could not have been exposed to heat enough to melt iron; for it will be remembered that there were hundreds of their skeletons to be seen about the ruins, which consisted of thin sheet iron, and nails with large heads, the wood being entirely destroyed; and it is evident, that sheet iron as thin as they are made of, could endure the heat of a furnace but very few minutes.

The following is the copy of a certificate voluntarily got up and handed to me:

"This is to certify, that on the 9th day of September, 1835, at the Fair of the Mechanics' Institute at Castle Garden, Mr. BENJAMIN SHERWOOD, made trial of his Double Safe. A cupola was built outside the Fort, and two bellows applied. The books were deposited in the presence of the Managers and others, and it was then put into the cupola furnace with a quantity of cast iron: at 4 o'clock the heat was so that the cast iron melted down. The blast was continued until 6 o'clock, when the furnace was broken to pieces and the Safe taken out and opened. The books were perfectly uninjured and scarcely warm, though the outside of the Safe had endured a heat sufficient to melt cast iron, for more than two hours.

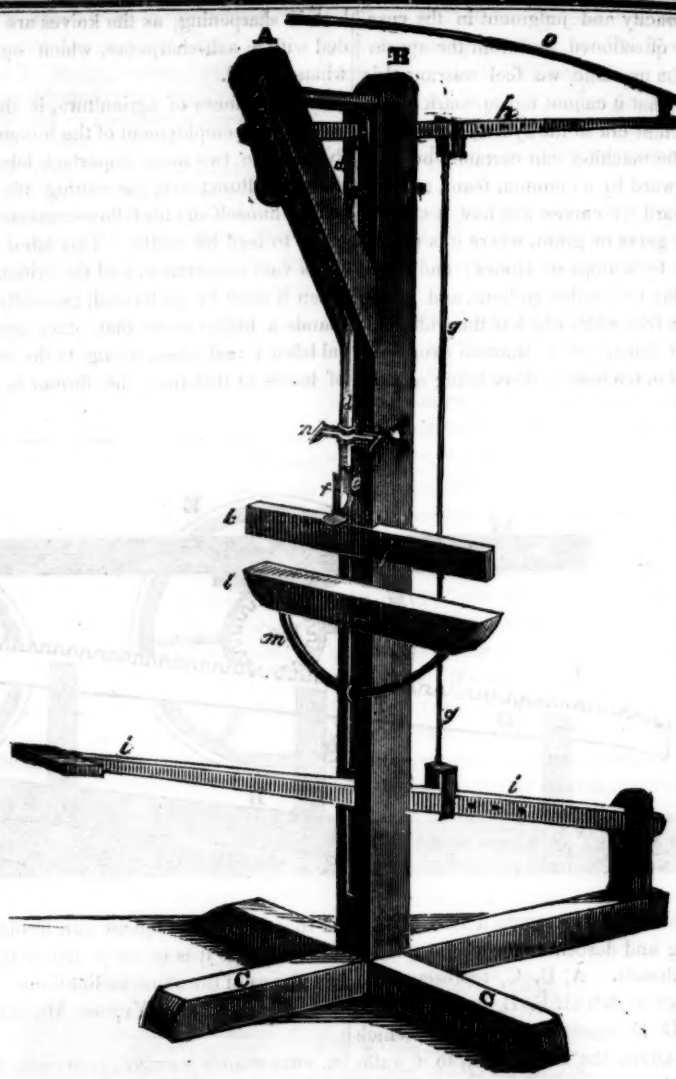
SAMUEL CARTER, 36 Vesey-street.
OWEN G. WARREN,
W. J. MULLEN, 175 Broadway, up stairs.
HENRY DURELL, 216 William-street.
J. WALTER WEAVER,
RICHARD BRAGAU, 41 Wooster-street.

The Committee awarded the above Safe the Silver Medal of the Institute, which is its highest honor.

The Safe is portable, and mounted on castors; and may be had at No. 65½ Wall-street, where the one referred to above may be seen, together with the iron melted round it, and parts of the wall with which it was enclosed, and other evidences sufficient to satisfy the most sceptical.

BENJAMIN SHERWOOD, Patentee.
New-York, Oct. 1st. 1836

MORTICING MACHINE.—The following cut prereesents a Morticing Machine, exhibited at the Fair of the AMERICAN INSTITUTE, in October 1835, by Mr. George Page, of New-Hampshire, to which was awarded a *silver medal.* At the recen exhibition, a diploma was awarded.



DESCRIPTION.

C, C, B, A, the *frame,* consisting of two cross pieces or sills, with an upwright post from their centre, and a piece projecting upward in front at an angle.

d, d, The slide, with a socket in the lower end, into which the chisel is inserted. This slide is of iron, connected with the lever *h,* and sustained in its place by two boxes, passing through the upwright, which are regulated by thumb-screws on the side of the post.

e, The CHISSEL, a small but very important part of the machine. It is made of cast steel, about six inches in length, and from *one-eighth* to an inch in diameter. The cut is perpendicular on *one* side, and beveling on the other, with *side cutters,* projecting backward about one-fourth of an inch, which serve not only to make the sides of the mortice as smooth as the ends, but also to clear the chips, as the chissel is withdrawn from the mortice.

This chissel is either *single,* or *double,* cutting one or two mortices of equal width and depth at the same time. It has also a tool for making *dowells,* and another for cutting holes in Venician blinds, for the cord to pass through. The two latter are of much use, especially that for making dowells, or pins, of any size, from one-fourth to an inch in diameter, and 4 to 6 or 9 inches in length; and the other performs, at one pressure of the foot, an operation which in any other way requires five times the labor.

f, The stop, which is made fast to the upright by a bolt and thumb-screw, to prevent the timber from rising when the chissel is drawn up by the spring.

g, g, The connecting rod between the lever *h* and the treadle. This rod is movable to accommodate ahe depth of the mortice.

h, The *lever,* passing through the upright post and front brace, to which it is connected, in front, by two straps of iron. The lever, is about three feet in length, and at its extreme end connected with a spring-poll to raise the chisel from the mortice.

i, i, The treadle or foot-board, by which the machine is put in motion. This foot-board is also, like the lever, about three feet in length; passing through a long mortice in the lower part of the upwright post, and made fast *at the back end,* to a short upright standard, rising about 14 inches from one of the cross sills. It is then connected by an iron rod in the rear of the upwright post, with the lever at the top, which rests upon the slide *d, d,* into which the chissel is inserted. The lever *h* acts upon a pivot in *front,* resting, at about nine inches from the pivot, upon the top of the slide *d, d,* which is moveable—and is connected by a rod with the treadle *i, i,* which acts upon a pivot at its extreme *back* end. By placing one foot upon the foot board, and pressing it down, the back end of the lever *h* also descends, and causes the chissel to perform its office upon the timber, which is laid upon the rest *l.* It will be readily perceived that a powerful leverage is obtained by this arrangement, and that a rapid motion is easily produced with the foot, by which the chissel is driven into the timber, and drawn out again by the aid of the spring pole.

The timber to be mortice is held in ist place on the rest *l,* until it receives a thrust from the chissel, when it is moved forward one eighth of an inch, by hand, or otherwise, as the chissel rises, and falls again by the aid of the foot. When the mortice is headed down at one end, to its proper depth, the chissel is turned the half of a revolution, by the aid of a spring and movable box *n,* and again confined, by a spring, in a proper position, and the timber is caused to retrace ts course, and the mortice is completed, to a uniform depth, and headed down at the other end; and, on turning it over, the chips will either drop out, or may be easily

picked out, as the chissel is so constructed, with side cutters, as to cut at *both sides*, as well as at the end; and therefore the mortice is not only perfectly true, or uniform in its sides, but also smooth, or free from splinters, arising from cross grain, as is frequently the case in the ordinary mode of morticing.

k, A back board or fence, which serves to keep the timber parallel.

l, The *rest* or *bench*, on which the timber to be morticed is laid. It may be *raised* or *lowered*, or placed at any desired angle to suit the nature and size of the work.

m, The half-circle, by which the position of the rest is regulated.

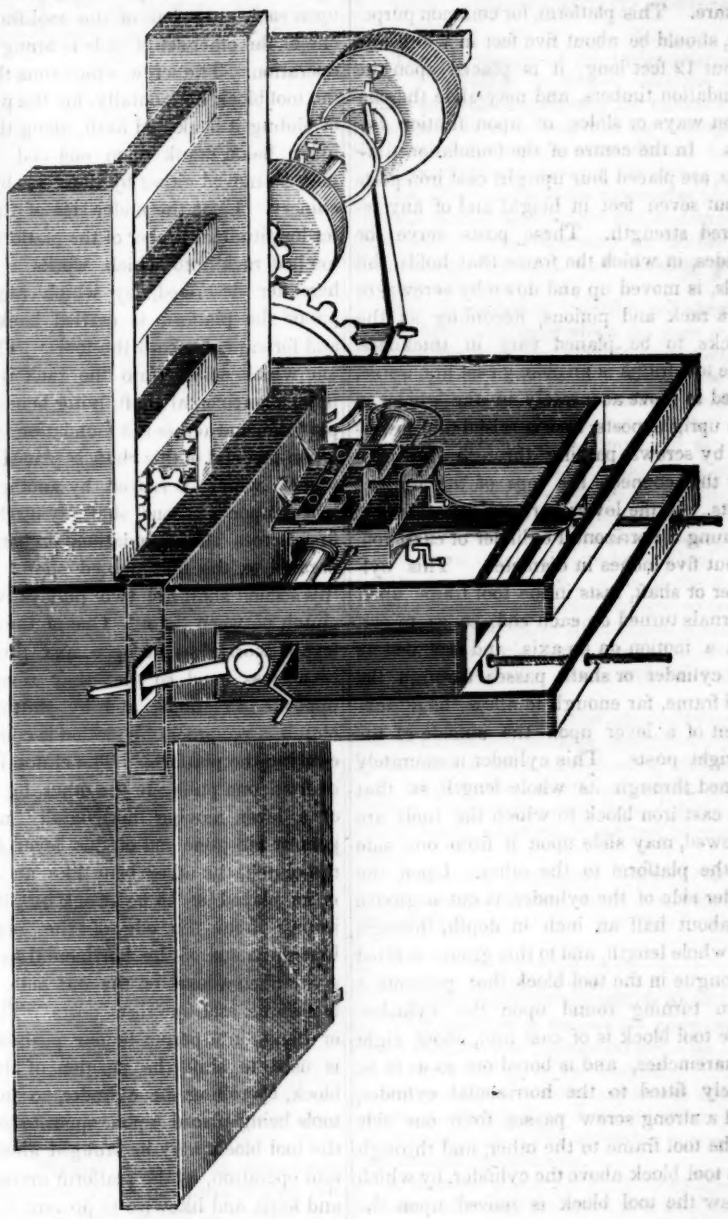
n, The box and thumb-spring, by which the position of the chissel is regulated.

o, The spring-pole, (shown in part,) which acts upon the lever *h*, and of course the slide and chissel which are connected with it.

It will be readily perceived that, by pressing the foot-board down to C, the chissel *e* will be brought down in a perpendicular line near to the top of the rest *l*; and it may be repeated an hundred times a minute, and thereby cut a mortice three inches or more in depth, and six to twelve inches in length, according to the wood, in a minute.—[Ed. M. M.]

CLARK AND BOYNTON'S STONE-CUTTING MACHINE.

This machine of which the annexed engraving presents an accurate representation, and for which Letters Patent of the U. S. were granted last Summer, was contrived with particular reference to the building marble of the West Stockbridge quarries. As yet only one machine has been erected, yet the principles upon which it operates has been so thoroughly tested, as to leave no doubt that most, if not all of the American marbles and sand stones, can be wrought by it with an accuracy, rapidity and beauty of finish, which cannot be equalled by manual labor. Thus far, it has been only tried upon the West Stockbridge marble, and it has been found that where no more than one inch in thickness is to be taken from the side of a block, the machine by passing once over it, will produce a level surface ready for the polisher. And experiment has also demonstrated, that a stone wrought by the machine, is more easily finished than one which is cut by hand. The machine, while in actual operation, cuts at a rate varying from 16 to 40 superficial feet per hour, according to the texture and size of the block; short and narrow pieces rebuiring more time in proportion, than those which nearly fill the platforms. The machine now in operation, will cut a block 10 feet long and 3 feet square, or one 10 feet by 3 feet in width, and any thickness less than 3 feet down to 2 inches. It cuts the edge of the blocks as well as the face;



CLARK AND BOYNTON'S STONE-CUTTING MACHINE.

preserving the corners entire. It will cut all descriptions of straight mouldings, as for steps and cornice, and it will round or flute a column. The steady and uniform manner in which the tools are applied to the stone, not only prevents them from breaking, but the wear and loss of steel is much less than in tools that are used by hand. The great strength and simple construction of this machine, render its liability to get out of repair extremely small, and for the same reason any practical mechanic can operate it, without the slightest difficulty.

The following is the specification of the patent.

To all to whom these presents shall come. Be it known that we, Anson Clark and Charles B. Boynton, of West Stockbridge, in the County of Berkshire and state of Massachusetts, have invented certain new and useful improvements in the cutting or planing marble, and other stone. Upon a suitable foundation, are placed two sticks of timber, about 12 inches square and at least twice as long as the longest block of stone which is intended to be cut or planed; these timbers are designed to support the other parts of the machine, and are framed together about five feet apart. A platform to hold the blocks which are to be planed, is formed by bolting plank, two or more inches thick, upon

longitudinal timbers about eight inches square. This platform, for common purposes, should be about five feet in width and about 12 feet long, it is placed upon the foundation timbers, and may slide thereon upon ways or slides, or upon friction rollers. In the centre of the foundation timbers, are placed four upright cast iron posts about seven feet in height and of any required strength. These posts serve for guides, in which the frame that holds the tools, is moved up and down by screws, or by a rack and pinions, according as the blocks to be planed vary in thickness. The tool frame is an oblong cast iron frame, fitted to move accurately in the guides of the upright posts, and is raised and lowered by screws, passing through the cross bar that connects the tops of the upright posts. In the lower part of this tool frame, is hung a horrizontal cylinder of cast iron, about five inches in diameter. This cylinder or shaft, rests in the tool frame upon journals turned on each end, so as to permit a motion on its axis, and one end of the cylinder or shaft, passes through the tool frame, far enough to allow the attachment of a lever upon the outside of the upright posts. This cylinder is acurately turned through its whole length, so that the cast iron block to which the tools are screwed, may slide upon it from one side of the platform to the other. Upon the under side of the cylinder, is cut a groove of about half an inch in depth, through its whole length, and to this groove is fitted a tongue in the tool block that prevents it from turning round upon the cylinder. The tool block is of cast iron, about eight squareinches, and is bored out so as to be nicely fitted to the horrizontal cylinder, and a strong screw passes from one side oft he tool frame to the other, and through the tool block above the cylinder, by which screw the tool block is moved upon the cylinder from one side of the platform to the other. Two sliding cast iron plates of about an inch in thickness, and of the same width of the tool block, are fitted to the tool block one upon each side. To these plates the tools are secured by screws, and the plates are moved up and down on the tool block by screws, so that the tools may be accurately adjusted to the surface of the stone, or to the depth required to be cut. There are projections both on the tool block and the sliding plates, through which these screws pass. A strong bar of iron, either cast with, or bolted to the top of the tool block, runs upwards about 12 inches, and between the cross bars that form the upper part of the tool frame. The use of this bar, is to steady the tool block, by resting alternately upon each cross bar of the tool frame, as one or the other set of tools is brought into operation. The screw which runs through the tool block horizontally, for the purpose of sliding it back and forth, along the cylinder, has a crank upon one end, and it may be moved either by hand or by machinery. Upon the under side of the center longitudinal timber of the platform, is a toothed rack into which works a pinion hereafter described, by which rack and pinion the platform is carried backwards and forwards beneath the tools. The pinion which works into the rack, is fixed upon a horrizontal shaft, lying beneath the platform, and across the foundation timbers. Upon one end of this shaft is placed a cog, wheel, which is moved by another cog, wheel, upon a second shaft, lying, like the first, across the foundation timbers, and parallel to the first named shaft. Upon this second shaft are two pulleys with a clutch between them. One of these pulleys is worked by an open, and the other by a cross band, so that they revolve in opposite directions, and by shifting the clutch, a reciprocating motion is communicated to the platform. The clutch is shifted from one pulley to the other, by means of a lever moving horizontally upon a joint or pin ; one end of this lever lies in the clutch, the other bent like an elbow, is so placed as to be struck by pins projecting from the edg, of the platform. Upon one end of the horrizontal cylinder, is attached a lever on the out side of the tool frame and upwright posts. This lever hangs in a perpendicular position, and is used to shift the position of the tool block, by rolling the cylinder, so that the tools being placed upon opposite sides of the tool block, may be brought alternately into operatton, as the platform moves back and forth, and likewise to prevent the tools upon one side from dragging upon the stone, while those upon the other side are cutting. The lower end of this lever is attached to a clasp upon one of the upwright posts opposite the edge of the platform. This clasp is several inches longer than the width of the post, so that it can slide a short distance back and forth upon th inner side of this clasp is fastened a forked spring, which runs in a groove in the edge of the platform. The compression of the spring in the groove causes sufficient friction not only to move the lever as far as the clasp will permit, but also to hold it steady in its place.

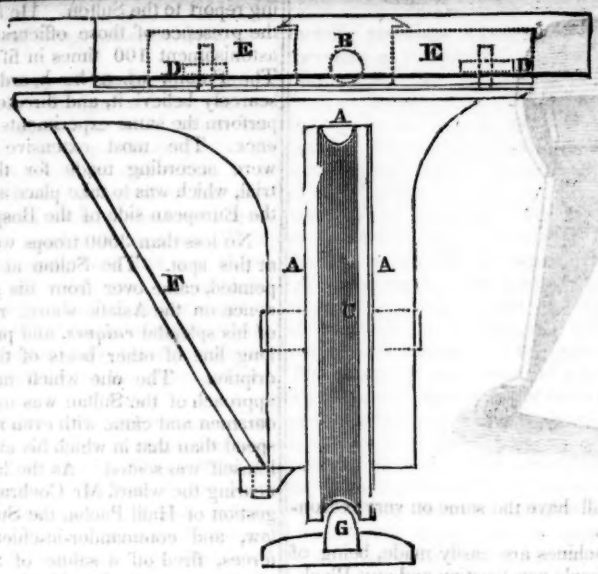
Since the above was in type, we have received the following account of the mode of working, from the patentees.

In the description of our stone-cutting machine, we omitted to mention one method of working, which we then thought of but little consequence, but which subsequent experiment and reflection have convinced us, forms one of the most important features of the invention. Instead of using a tool-block, with two tools upon each side, which block is moved as you will see by the cut, across the blocks as its surface is cut away, we dispense with the tool-block, and the screw which moves it, and construct our cylinder, so as to set a row of chisels or points forward across the whole width of the platform of the block is so wide—thus enabling our machine to take off a portion of the *whole surface* of a block, at a *single cut*, or we effect the same object, by using a single tool, as wide as the stone to be cut. By lessening the depth of the cut, and increasing its width, we diminish the risk of fracturing the stone and produce a better surface, at the same time, that we increase the capabilities of the machine. Thus a chisel, or sett of chisels, 8 inches in width, and cutting one eighth of an inch deep, works with the same rapidity as one, one inch wide, and cutting one inch deep, producing a better surface, and without any danger of fracture. This arrangement, as you will at once perceive, allows us to increase the strength of the machinery and power used, at pleasure, increasing in a corresponding ratio, the quantity of work performed in a given time. In the method of working the machine, which we described before, this could not be effected. We could not increase the motion beyond a certain speed, (about 15 feet per minute,) without destroying the temper of the tools, and we could not increase the depth of the cutting, without injuring the stone.

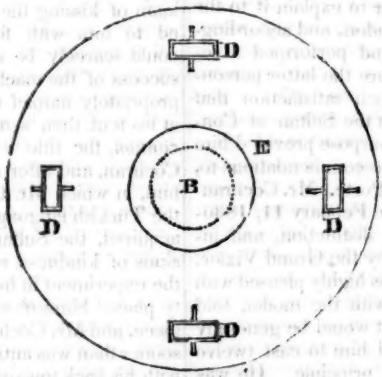
By the use of the wide tool, or many tools at once, no limit, other than the power at command, and the strength of the machinery, can be assigned to the rapidity with which stone can be wrought. We have used as wide a tool as we could secure in our present tool block, and with results that warrant all I have written above.

This also distinguishes the machine still more clealy than before, from the English or Scotch one, and I am the more pleased with this, because there are those, who not being able to purchase our patent at their own price, are making arrangements with Mr. Hunter to patent his machine in this country, thinking thereby to destroy our patent, or at least, affect its value, and this they do without understanding the principle of either machine, or the difference between them. Very respectfully,

CHARLES B BOYNTON



Top view of the metal plate E.



IMPROVEMENT IN RAILROADS.

The following letter from Judge Wright was intended for the November number of the Journal of the American Institute, but was excluded by the press of matter in relation to the 9th annual fair. The model is still at the repository 187 Broadway. As it is important, if it is an improvement, that it should be immediately known, you will do a service by publishing the letter, that practical engineers may examine and hear the explanations of Dr. Plantou, who will continue in town a few days.

NEW-YORK, Nov. 4, 1836.

Dear Sir. I have examined the model of a Railroad car and rails adapted thereto, now at the American Institute, invented by Dr. A. Plantou, of Philadelphia.

The action of the car whereby the forward motion given to it, adapts itself to curves of small radius, as well as tangent lines, is new to me, and appears to possess the very valuable property of greater security against running off the track, and also against breaking the axle. These are the cause of nearly all the injuries to limb and loss of life, which happen on our present Railroads.

If Dr. Plantou succeeds in introducing his improvements in the form of cars and rails suited to them, he will be entitled to be called a public benefactor, and will place the public under very great and lasting obligations.

Very respectfully,
I am dear sir,
Your ob't ser't
BENJ. WRIGHT.

T. B. WAKEMAN, Esq.
Corresponding Secretary
American Institute.

[Com. Adv.]

DESCRIPTIONS OF THE ENGRVINGS.

A The standard for the Wheel.
B Neck of ditto acting as a Pivot.
C Grooved Wheel working in the fork A.
E Metal plate at the bottom of the Cars.
D Friction rollers in the metal Plate.
F Side braces to steady A.
G Rail with rounded edges.

LAPHAM'S IMPROVED POWER LOOM, INVENTED BY BENJAMIN LAPHAM, OF WATERFORD, SARATOGA COUNTY, NEW-YORK.—PATENT.

The advantages of this improvement are, 1st. The shuttle is thrown with the same force and velocity, whether the motion of the loom is slow or quick; and the quantity or quality of the work is not affected by any irregularity in the speed of the loom.

2d. The saving of the expense of pickers, picker strings, and picker rod, and avoiding the loss of time consequent on the frequent regulating, breaking, and mending of the picker strings.

3d. By means of the whip roll above the warp beam, and over which the yarn passes, the tightness of the web is regulated, and kept constantly uniform; and, as the whip roll yields a little when the lathe beats up, the warp is much less liable to break.

The whip roll is so connected with the ratchet wheel that, when the loom makes cloth, the warp is uniformly delivered from the warp beam; and, if the web becomes too tight, it causes the whip roll to descend, and take a new notch on the ratchet wheel which turns the warp beam; while, if the web is too loose, the warp beam remains stationary till the proper degree of tightness is restored by weaving. By these means the cloth is rendered perfectly even, and of uniform thickness.

4th. The temples are so attached to springs as to be thrown back in case the shuttle or lathe strikes them, thus avoiding the danger of breaking the shuttle or the temples.—These temples also hold the web better, and form better selvedges than those in common use.

For further particulars, inquire of WALES & PLIMPTON, 40 Pine-street, or the *inventor*, Waterford.

WARREN'S PATENT THRASHING MACHINE.

This machine is formed for convenience, as it receives the unthrashed grain on either side, by a change of the hopper.

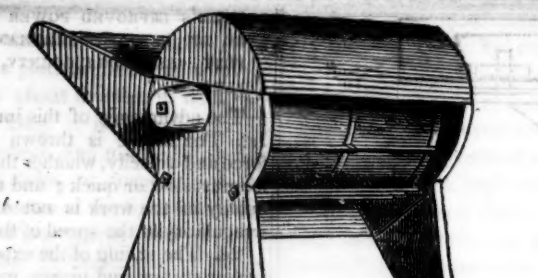
It cannot be injured by any stones or sticks passing through it, as it has no spikes to be broken or bent. The operating parts are of substantial wrought iron.

It thrashes all sorts of grain clean from the straw, and leaves the straw in a whole state, fit for binding. It requires but few hands to tend it, and but little power is necessary to thrash 200 bushels in a day.

Four horses will thrash 300 bushels in 12 hours, by having relief at half the time. One horse will do good business with the $25 Machine; that is, from 75 to 100 bushels, according to the nature of the grain.

Directions for Using.—Let a band from a drum or wheel of any power be put on the whirl to run easy. Let the tender push the grain in, and it will pass through in one second. It is thrown about fifteen feet. The cylinder must be raised, (by putting a piece of leather under the boxes,) for dry grain, to about half an inch, and let down to one-fourth of an inch for wet grain. The boxes should be oiled or greased often.

Price of Machines.—$20 for hand power, $25 for one horse power, $30 for two



horse power, $40 for three or more horses, and $50 for extra sizes. A liberal discount at wholesale. All orders post paid will be punctually attended to. Address the inventor at 79 Barclay-street New-York.

E. WARREN.

N. B. Any man wishing to buy the patent (which was granted May, 1835,) for his county, shall have the same on very reasonable terms.

The Machines are easily made, being of the most simple construction and any Blacksmith and Woodworkman can build them. Draughts of an exceedingly strong and cheap horse power, which will not cost more than $20, and is made in the simplest manner, will always be given if reqired.

MR. COCHRAN'S IMPROVEMENT IN FIRE ARMS.

We copy the following account of Mr. Cochran's invention, and Adventures. It will be found highly interesting.

COCHRAN'S MANY CHAMBERED NON-RECOILING RIFLE.—This extraordinary invention of a young American, native of New-Hampshire, and which is now being for the first time exhibited to the public, at the Fair of the American Institute, Niblo's Garden, deserves more than a passing notice. There are circumstances connected with it, which give a peculiar, if not romantic, interest in the history of the arts of our country. If any thing were wanting amidst the multitude of extraordinary inventions which have, for the last half century, been recorded in the archives of our patent office, to illustrate and establish the pre-eminent claims of our country-men to genius of a high order, it would be that which forms the particular subject of our remarks.

Mr. Cochran's father was a lawyer, and afterwards a merchant of eminence in Enfield, N. H.; and the son, John Webster Cochran, was born there, and has invented the species of fire arms in question, was brought up to no particular business. At the very early age, however, of 16, he discovered a strong taste and passion for mechanical experiments, and was consiantly occupied in the construction of machinery, which his father approving of, unlike many other fathers, encouraged, and to further the wishes of his son, expended several thousand dollars in his behalf, in the cost of the different kinds of apparatus required.

When only 18, he made the discovery in question, but did not perfect it until three years after. He then went to France and England, and exhibited his model cannon to Louis Phillipe and William the IV. While at Paris in 1833–'34, he was requested by the Turkish Ambassador to explain it to the Turkish Minister at London, and accordingly went to Woolwich, and performed a series of experiments before the latter personage, which gave so much satisfaction that he urged Mr. C. to visit the Sultan at Constantinople, & for that purpose provided him with the most flattering recommendations to, the Court of the Sublime Porte. Mr. Cochran arrived at Constantinople Febuary 11, 1836. was received with great distinction, and introduced to the Sultan by the Grand Vizier. His Turkish Majesty was highly pleased with the experiments made with the model, told Mr. C. he was satisfied it would be generally adopted, and requested him to cast twelve pounders on the same principle. He was provided with elegant apartments in Pera, raised to the dignity of Master of Cannon, and furnished with as many workmen as he required for the accomplishment of his task. The treatment, in fact, which he received, was equivalent to that of the rank of an ambassador.

Mr. Cochran, however, finding there was no good foundry or mechanics, was obliged to undertake the work with his own hands; and though not brought up to the business of making machinery of any kind, by dint of much labor and perseverance, made himself all the necessary implements, the augers and the wooden apparatus for boring with horse power, and the preparations required for procuring the proper castings By good fortune he succeeded entirely to his wishes, and cast and bored three cannon, two of one pound each, and the third a *twelve pounder*, which last was finished in a style as perfect as he could have desired. On the 14th September following, he proved this last piece to his entire satisfaction, in the presence of all the chief officers of the Turkish government, who were delighted with its execution, and made a highly flattering report to the Sulton. He fired it off in the presence of those officers to their utter astonishment 100 times in fifteen minutes. The Sultan, when he heard of it, would scarcely believe it, and directed Mr. C. to perform the same experiments in his presence. The most extensive preparations were according made for this important trial, which was to take place at Tarache, on the European side of the Bosphorus.

No less than 3000 troops were assembled at this spot. The Sultan at the hour appointed, came over from his summer residence on the Asiatic shore, rowed in one of his splendid *caiques*, and preceded by a long line of other boats of the same description. The one which announced the approach of the Sultan was manned by 40 oarsmen and came with even more lightning speed than that in which his august highness himself was seated. As the latter was seen nearing the wharf, Mr. Cochran, at the suggestion of Halil Pacha, the Sultan's son-in-law, and commander-in-chief of the land forces, fired off a salute of 21 guns (the customary number) with the experimental cannon, which consumed less than two minutes and struck the assembled multitude with the utmost amazement.

As the Sultan at this moment stepped on the wharf, Halil, accompanied by the Grand Vizier, and other dignitaries, ran to His Majesty, and the former, making the usual salaam of kissing the Sultan's foot, announced to him with feeling of exultation that could scarcely be repressed, the wonderful success of the machine cannon, as they appropriately named it. The Sultan arrived at his tent, then sent for the *master of the cannon*, the title which was given to Mr. Cochran, and after a short conference with him, in which Mr. C. conversed chiefly in the Turkish language, which he had partially acquired, the Sultan renewing his expressions of kindness, requested him to perform the experiment in his presence. His Majesty placed himself within a few feet of the piece, and Mr. Cochran commencing rather sooner than was anticipated, the Sultan, then with his back towards the cannon, was somewhat startled at hearing the explosions suddenly succeeding each other with such inconceivable rapidity. The cannon was fired 100 times as before in 15 minutes, during which the barrel acquired 650° of heat while the revolving cylinder which contained the charges was comparatively cool, being only 250° of the temperature. The Sultan's exclamation expressive of his delight was "God save the Americans—if such boys as you (Mr. C. being then but 21) can invent such things, what can your men do!"

He then asked him for the bill of expenses, and being told by Mr. C. it was left at his own pleasure, he went the next day at the request of the Sultan to visit him at his palace. The bag of gold he there received was truly an imperial present, and enough to make his fortune. The amount would scarcely be believed should we name it, and we do not feel ourselves authorized to specify the sum more distinctly than may be inferred from what we have said.

Mr. Cochran soon after returned to America, with an understanding that he should have a contract for supplying a large number of cannon of the pattern exhibited,

whenever it could be agreeable to him to execute it.

These adventures of Mr. Cochran, yet a youth, seeking in a foreign land that patronage and encouragement which were the proper measure and appreciation justly due to his pre-eminent talents, and which it is lamentable to be obliged to confess, his own countrymen would not have bestowed upon him, recall the similar examples of West, Fulton, Perkins, and others, and are calculated to reflect discredit upon our national reputation, inasmuch as Americans ought to be the first to reward these incentive powers which are so emphatically characteristic of, as well as honorable to the genius of our people.

DESCRIPTION OF THE INVENTION.—The invention of Mr. Cochran is adapted to every species of fire arms. The articles at present being exhibited by him at the Fair, are a model cannon similar to that experimented upon before the Turkish Emperor, and a rifle complete, which we shall now proceed to describe. He has fired this rifle 1200 times, 500 of which discharges were in rapid succession, and without producing any expansion whatever in the chambers of the cylinder, or giving it a greater temperature than 100 degrees of Fahrenheit. As many as 2000 discharges are required before the rifle will have been properly tested after the rule of the war department. Mr. C. is ready at any time to fulfil this compliment and go beyond it. This afternoon he will fire it at Niblo's Garden 500 times in succession. The cylinder is a solid piece of iron, revolving in the plane of the barrel, and occupying a position directly at the base of the barrel which it is in close contact with.—The dimensions of the cylinder are in diameter about 4 inches, and in thickness seven-eighths of an inch. There are in this one, nine open chambers for the charges, which chambers are perforated upon the periphery and converge, like the radii upon the centre. The cones on which the percussion caps are placed, form another series of radii concentric and within the circuit of the chambers—a solid metallic partition dividing all the caps from each other. Each cone for the cap communicates with its appropriate chamber, and opens in the centre of the chamber, so that the whole charge of powder is ignited at once, by which the explosion of all the powder is made in one half the time of ordinary rifles, and therefore so much the more force given to it, and consequently a much less charge is required—the weight of the charge being only *one grain and a half*.

As each chamber in its revolution comes in exact line with the tube of the barrel, the cock strikes the percussion cap, and the explosion takes place instantaneously. The chambers, as they successively come into a line with the barrel in the revolutions of the cylinder, are momentarily retained firm in this position by the *regulating dog* connected with the cylinder where it joins the breach, and the pin of which dog catches in the small perforations made at equal distances for its reception. Nor can the cock strike the percussion cap until it is in exact position, for if the chamber is not in its proper place, the socket into which the hammer of the cock falls has presented to it only the metallic partitions between the cones, and therefore on striking these no explosion can take place. Nor can any accident happen from explosions of the other chambers contiguous to the one in connection with the barrel. Such an accident never did happen with this rifle, and if it should, the direction of the chambers is such that their charges would do no mischief. Nor can the flash of the powder in the chamber in a line with the tube of the rifle be communicated to the other chambers, as the joint of the cylinder where it comes in contact with the barrel is so close that it is air tight, and will not permit of such extension of the ignited powder. The charge of one grain and a half of powder requires a size of ball of 50 to the pound, and the force is sufficient to perforate eight boards each of one inch thickness at the distance of 60 feet. The arrangement of the ball is another beautiful and ingenious invention. Their diameter is exactly fitted to the chamber, but larger than the diameter of the tube of the barrel by an incremen equivalent to the depth of the spiral creases on the inside of the tube. So that no patch is required as in other rifles, for it is forced into the tube of the barrel and exactly fitted to it by becoming compressed into a cylindrical shape, and its sides grooved by the creases of the barrel, whereby it is kept firmly in its course, and move steadily and with such precision, and so closely wedged that there is no *windage* can get before the ball, and give an irregularity to its motion—a serious inconvenience to which all other rifles are liable. The aim of Mr. Cochran's rifle therefore is always deadly and sure.

By this arrangement there is another additional power acquired, for you have the entire force of the charge behind the ball until it leaves the muzzle,and in the same proportion is the velocity augmented, and, therefore, a less charge required on this account, as well as on account of the manner in which the percussion caps communicate with the chambers, as already stated. The creases of the barrel, as we before said, keep the ball exactly in its place throughout its whole course to the muzzle, whereas the patch, always used in ordinary rifles, is constandly liable to tear, which causes the irregularity in the ball's motion, and defeats the very object for which rifles were intended. The manner in which the percussion cones communicate with the middle of the chambers, causes the powder to explode in one half the time it would if the ignition took place at the end, of, and posterior to the chamber.

As an evidence of the accuracy and effectiveness of this rifle, Mr. Cochran related a bear hunt, in which he took part, a few days since, on the Moose Mountains, in his native state of New-Hampshire. He fired at the animal with the rifle now at the Exhibition, and lodged nine balls in his brain, while he was under full way, at the distance of some four or five rods from him. The bear was brought to the ground, and the nine balls recognized and identified from the others lodged near them, by the grooves made in them by the creeses of the tubes, and by their cylindrical shape. His brother sportsmen who had, until then, deemed themselves in possession of good sporting pieces, expressed themselves in raptures at the superiority of their young countryman's magic rifle.

Another remarkable property in this rifle is, that it has not the least recoil whatever, so that there is not the slightest jar or irregularity in the direction.

The rifle will be fired at Niblo's 500 times in succession this afternoon. The patent right for the rifle and pistol, for the United States, has been sold by Mr. Cochran to the trustees of a company in this city, for $300,000. Richard & Richardson, No. 41, South Street, are the agents for the company, and have a large manufactory at Springfield, Massachusetts, and are selling the rifles faster than they can make them.

Col. Bomford, at the head of the ordnance department, U. S. army, who was present at the Fair, was so much pleased with Mr. Cochran's rifle, that he ordered him to make one, and bring it to Washington for experiment.

From the Farmer's Register.

ACCOUNT OF THE LATE ROBERT BARCLAY, ESQ. OF URY, A CELEBRATED AGRICULTURIST.

Extracted from Mr. Robertson's Agricultural Survey of Kincardineshire.

But the man who exerted himself most for the improvement of the country; the man whose labors in agriculture were the most strenuous and well conducted; and whose example had the most prevalent and most extensive influence, was the late Mr. Barclay of Ury. His, indeed, were no common powers. Of the most athletic form of body, endowed with the most ardent, energetic, and comprehensive mind, he employed his great talents as an agriculturist with the most unwearied perseverance, and to the happiest and most beneficial results. The subject which he had to work upon and to improve, or rather to subdue, was of the most obdurate nature, and to most people would have been unconquerable. But he was not of a nature to be intimidated. Difficulties tended only to excite his activity; and, adhering tenaciously to his own preconceived and well adjusted plans, he was ultimately successful.

The estate of Ury, the chief subject of his improvements, lies on both sides of the water of Cowie, and extends from Stonehaven, in a northwesterly direction, for nearly five miles. The house of Ury is situated about a mile and a half from Stonehaven, on the north banks of the Cowie. This rivulet, whose banks have been destined to receive so much embellishment from the hands of Mr. Barclay, is a small trouting stream, in general of no great capacity; but there are times when the mountain torrents, from which it is derived, come down so suddenly, and with so much impetuosity, as to swell it, in some places, more than twelve feet above its usual level. Happily, however, at Ury house, where this occurs, it is confined within strong natural bulwarks of rock, so as to prevent devastation.

Mr. Barclay succeeded his father to this estate, in the year 1760. At that time there was, except a few old trees around

the mansion house, scarcely a single shrub of any value on the whole property. The Cowie, which runs for above three miles through the lands of Ury, had, in the lapse of ages, worn itself a deep channel; the land on either hand shelving towards it, in an angle more or less acute, in proportion as the soil was more or less adhesive. In general, through the whole extent of this course, springs of water from the circumjacent grounds were continually oozing to the banks, and forming into marshes and quagmires, which from time to time burst, and were precipitated, by land slips, into the river. Thus, every year the banks were becoming wider, by the breaking down from the overhanging brae of some new piece of land, to be slipped, in its turn, into the stream, which, being periodically flooded, swept the whole into the sea. The only product of these banks was a few natural alders, of no value whatever, and a coarse kind of aquatic herbage, to which cattle had hardly any access, and on which, if they had, they would scarcely have fed.

The arable land was divided into a number of small farms, each having a right of pasturage on the contiguous hills. The tillage was superficially performed with very imperfect implements. Almost every field was incumbered with obstructions of one kind or other—such as, pools of stagnant water—quagmires, where the cattle were ever in danger of losing their lives—great baulks of unploughed land between the ridges—but, above all, stones abounded, not merely on the surface, but through the whole depth of the soil. There were no enclosures; no lime was used as a manure; and the only crops were bear and oats. There was no cart nor wheel-carriage of any kind; nor was there even a road. In short, no place at that time abounded more in the evils attending the ancient system, nor enjoyed fewer of the advantages of modern husbandry, than the lands of Ury.

Mr. Barclay, who had acquired his ideas of agriculture on the fertile plains of Norfolk, could ill brook a state of husbandry like this. So soon, therefore, as he succeeded to the estate, he set, about its improvement in a style which soon appeared to be neither superficial nor fleeting, but, to the utmost degree, radical and permanent. For this purpose, in addition to the lands that were at all times in the hands of the family, he took into his own management all the farms in the vicinity of the mansion, as the leases expired. And as none of them were of long endurance, he had, in the course of about 30 years, improved most thoroughly 903 acres of arable land, besides planting from 900 to 1000 acres with wood. Of the above quantity of arable land, there were originally about 300 acres, which were altogether either marsh or heath. Of the remaining 600, which were let to tenants, about one-fourth part, or 150 acres, consisted of baulks, wastes, marshes, and pools, interspersed through every field; the quantity in actual tillage never having exceeded 450 acres. So that, on the whole, Mr. Barclay, has meliorated about 450 acres, and brought them, from a very imperfect, to the most correct state of culture; and improved, from a state originally of the most barren and forbidding appearance, about 450 acres more, which are now in a high degree of fertility.

The means by which all this has been accomplished, will form the subject of the following investigation, and fall to be related under these different heads. 1. Draining. 2. Trench-ploughing. 3. Removal and disposal of stones. 4. Application of lime. 5. Enclosing. And, 6. Rotation of crops. Plantations will form the subject of a separate section; as will comparative value, another.

1. *Draining.*—This primary step towards improvement was so indispensable on the lands of Ury, that out of 52 fields, into which Mr. Barclay divided his improved lands, there was only one in which draining was not required. The sub soil of nearly the whole was also of such an adhesive nature, that the spring water could not filter through, nor draw to any considerable distance. So much was this the case, that it was frequently requisite to form the ditches within a few yards of each other, before the purpose of complete drainage could be accomplished. One field, consisting of 25 English acres, is, in particular, still pointed out as a remarkable instance of this. It cost £150 for merely the opening of the ditches, though these were contracted for at the low rate of three farthings the ell. This gives 48,000 ells for the field, or 1920 for the acre. And if we suppose the ditches to have been two and a half feet wide, (and, in such a marshy soil, less would not have kept them from falling in,) the ground thus cast up would amount to more than one-third part of the whole mass; and the drains must have been, at the average, within less than five feet of each other. To this expense of opening or casting the drains, there falls to be added, the expense of filling with stones and covering again with earth. The filling with stones, at the rate of one cartload to three ells, would require 16,000 such loads; a large part of which, if not the whole, must have been brought from a considerable distance, as it is more than probable the marsh could not, of itself, furnish such a quantity. This labor, together with the expense of laying the stones in the ditches, and covering them with earth, cannot, on the most moderate estimate, be calculated at less than double the first expense, or £450 for the whole; thus making more than at the rate of £20 the acre for draining alone. The field itself, having been thus so completely turned inside out, has altered its aspect from its originally mossy hue, to a dale white, the color of the clayey sub-soil; which having been thoroughly pulverized by trench-ploughing, and a copious application of lime, is now, not merely fully dry, but become considerably fertile. The total expense laid out on this field, would be little short of £40 the acre; for independent of drainage, Mr. Barclay's other means of improvement generally cost him, per acre, about £18. This expense, in the present instance, would probably do more than purchase the land after it has been improved, and would certainly have deterred any common cultivator from making the attempt. But Mr. Barclay was not a man to be easily moved from his purpose; and, having once resolved to bring his whole lands into a full state of cultivation, this field, which would otherwise have remained a blot on the surface, would not have been left unimproved although it should have cost ten times the sum.

Mr. Barclay's drains were generally two feet and a half wide at top, ten inches wide at bottom, and about three feet deep. Less dimensions as to breadth might perhaps have served every purpose of draining; but the expense of casting them would have been very little, if at all, diminished by narrower ditches. For in a soil, of which one half the substance consists of stones and gravel, and the other half of an adhesive clay intermixed with these, it becomes impracticable to cast a very narrow ditch. To this it may be added that as the lands of Ury had such a profusion of stones on the surface, it became a relief, in the trouble of clearing them away, to have large ditches into which they might be put.

2. *Trench-ploughing.*—The next operation was trench-ploughing; and there were two objects in view from this labor; 1. To acquire a depth of soil; and, next, to get rid of stones: and the work was persevered in till both were accomplished. Previous to Mr. Barclay's operations, the quantity of stones upon the lands of Ury was, as has been already stated, immense, both on the surface and through the whole depth which the plough had ever reached. The tillage had been but superficially performed; nor, indeed, had the tenants either skill or ability to perform it better. But Mr. Barclay soon made his lands assume a different appearance; and from being the most incumbered with stones, and from having the thinnest staple of soil, they became the least incumbered, and of the deepest soil in the county. This was not, however, an easy acquisition, nor was it accomplished at little cost. With a set of uncommonly strong implements, and with six, and sometimes eight, heavy horses in the draught, he made the plough to descend, in spite of every obstruction, sixteen or eighteen inches at once; and, after carrying off the stones, as they were turned up, as from a quarry, he repeated the operation, till, in the end, he obtained a free soil of fourteen inches deep, and of a mould fit for every agricultural purpose. The quantity of stones thus removed was in general very great, and in some cases, almost incredible—even to the amount of more than a thousand cart-loads from an acre. And the surface of the land itself was observed to have become evidently ten or twelve inches lower by the operation.

3. *Disposal of the Stones.*—This would have been a work of weary labor, had not Mr. Barclay found out beneficial purposes for almost the whole. The draining, already noticed, consumed them in myriads. Perhaps more than 100,000 cart-loads of

100,000 tons weight, were thus disposed of. On this point, however, one can speak only from probable conjecture ; for, of such a multifarious distribution, no account was ever attempted to be kept. But, judging merely from the vast extent of drains that were made in progress of this branch of improvement, over nearly 900 acres, and which certainly amounted to several hundred thousand ells, the quantity of stones requisite to fill these could not be less than as now stated, but was probable much greater.

It has been already remarked, that when Mr. Barclay succeeded to the estate, there was not a road on it. But as he clearly perceived that well made roads, so essential to all improvement, were indispensably required at Ury, so he set about the construction of them without delay, and was assisted in this useful work by the statute-labor of that district of the county. The length of road altogether, that was thus made through his lands, with all its ramifications, extends to about eight miles, and consumed, to good purpose, many thousand cart-loads of stones.

He had another expedient still, namely, the filling up of hollows and pools. This is a branch of improvement that does not fall in the way of every cultivator ; but Mr. Barclay had it in abundance. The inequality in the surface of many of the fields of Ury is still very apparent ; but it was much more so before he dressed them in their present form. In almost every field there were deep hollows, which in the winter, or in rainy weather, became pools, some larger and some less, of stagnated water. These did not owe their origin at all to springs, but existed merely in consequence of their situation, incumbent on an adhesive sub-soil that admitted of no filtration. In the winter they were always full, but grew less as the season became drier ; and some of them, in the prevalence of the drought of summer, became, through evaporation alone, altogether dry.

It is evident, that whatever might be the produce of coarse herbage that might occasionally grow in these hollows, or by the margin of these pools, there could be no crop of grain raised from them. But this was not adapted to Mr. Barclay's ideas of the use of soil, and he resolved to rid himself of them at once. His method was this :—He first caused a trench to be made, no matter to what depth, till he laid them completely dry, and thus got access to the soil at the bottom. This soil was generally of a considerable thickness, and had been acquired by a graduul accumulation of the finer particles of soil that had been washed down from the conterminous heights, and had been rendered of a still more fructifying nature from the residum of the vegetables which, from year to year, had alternately grown up and decayed upon their margin. This was too valuable to be lost. He therefore caused it to be cut out, and to be either carted or wheeled out with a barrow, beyond the limits of the hollow. The next work was to cast in stones from the contiguous fields, and to fill it up, not merely for the space occupied by the soil now taken out, but to as great a height as the water was wont to stand in the winter season. The last operation was to carry back the excavated soil, and spread it upon the surface of the stones. Thus, a noxious pool was converted into soil the most valuable in the field. I am credibly informed, that, in many of these old pools, the quantity of stones carted into them is upwards of six feet in depth : and that the number of such instances of improvement, from that extent downwards to that of two or three feet of filling up, is very considerable indeed.

After all, these three ways of disposing of the stones, though they must have consumed a quantity almost inconceivable, have not been able completely to swallow them up ; for, so very much did they abound originally, that many thousand cart-loads are still to be seen, that were tumbled, as the last resource, over the banks towards the channel of the river.

4. *Application of Lime.*—After the various and expensive operations of draining, trench-ploughing, and removal of stones, immediately followed the application of lime. Previous to the era of Mr. Barclay, the use of lime as a manure was, in this county, very circumscribed, though not altogether unknown in this respect ; but, in these days, its powers appear to have been overrated. This may be inferred from the practice which then prevailed, of sowing it over the surface by the hand from a sheet, by which means, a few bushels were made to overspread an acre. The effect which this meagre sprinkling had upon the soil, is not indeed stated ; but it could not have been considerable. There is, however, more reason to admire than to despise, in this particular, the exertions of those ancient husbandmen, when we reflect on the state of the roads at the time, by which the carriage of three bushels in a bag, on the back of a horse, was a work of greater labor than now to bring on a cart, three bolls. It may be remarked also, that the thin staple of earth which they had to manure, would require a proportional less quantity to produce an effect. But, be this as it may, the soil formed by Mr. Barclay, being so much deeper than the general soil of the country, required a more liberal allowance of lime, and he gave it a more liberal allowance accordingly. He never applied less, in any case, than forty bolls of shells to the acre, but more generally from fifty to seventy bolls ; so that the average may be justly stated at sixty bolls to the English acre. In one particular case, viz. in his garden, which he had trenched to the depth of five feet, he applied no less than at the rate of five hundred bolls to the acre ;—a quantity probably more than enough to saturate the whole mass ; and, of course, a misapplication, so far as the excess might extend. The boll here specified is what is called the water measure (from being used on shipboard) or Stonehaven barley measure, of 33 Scotch pints to the firlot, or 132 to the boll.*

This bountiful application of lime seems to have had the desired effect ; for, during the whole time of Mr. Barclay's practice, which extended to a period of 38 years, he never had occasion to apply lime a second time, except in two instances, in which, as the first application did not seem to operate so powerfully as he expected, he repeated the dose.

The lime which Mr. Barclay generally made use of, was imported at Stonehaven from Lord Elgin's limeworks, at Charleston on the Frith of Forth. Stonehaven may be about a mile and a half, at an average, from the difierent fields to which it was to be applied. This easy distance of land-carriage was a favorable circumstance to his improvements, and almost the only favorable one that attended them. The price of lime was, at first, only 1s. 11d. the boll : it was afterwards increased to 2s. ; from which it rose, penny by penny, till it came to 2s. 5d., which was the highest rate that Mr. Barclay had ever to pay. These all seem moderate rates, when compared with 3s. 8d., the present price (in 1807). But this is only a seeming, not a real cheapness ; for if we compare the different prices of lime with the prices of labor or of grain, at the different periods, there can be little doubt that 23 pence in 1760 was fully equal in value to 46 pence in the present year.

As Mr. Barclay applied lime to 903 acres on this estate, and limed about thirty acres a second time, and all at the rate of 60 bolls an acre, on an average, the quantity altogether thus made use of will be found to amount to 55,780 bolls ; and this, at 2s. 2d., the medium rate of price per boll, will amount to 6064*l.* 10s as the prime cost of the lime.

Mr. Barclay's importation of lime was not, every year, in equal quantities. In some years it did not exceed 1000 bolls ; in other years there were more than 2000 imported ; and, one year, the importation is stated at 4000 and upwards,—thus varying as the exigency of the case required. In like manner, his successor, who inherits a goodly portion of his father's ardor and energy of mind, had in one year, lately, as much land under a course of improvement, as to require an importation of 6000 bolls of lime shells at once.

5. *Enclosing.*—When Mr. Barclay succeeded to Ury, there was not a single enclosure on the whole estate. Indeed, in a country where artificial grasses are unknown and where the only pasture among the arable lands consists of wastes, baulks, and marshes, scattered in various directions, of every size, and in every kind of irregular shape, among the different corn fields, enclosures can make no part of the system. In fact, they could be of no use ; for no beneficial application of them could be effected. A country enclosed must always be a country that, in other respects, has undergone some degree of improvement.

Mr. Barclay, in the course of improving his lands to the extent already stated, caused them to be enclosed, field by field, as soon as the previous meliorations had taken place. The whole estate is divided into fifty-two enclosures of various sizes, from fifteen to thirty-five acres, with only four fields below the first size, and five that are above the

* This boll is rather more than 4 bushels. See Scottish measures p. 93, vol 1 of Far. Reg.—Ed.

second. The least field is of four acres, and the largest of sixty. The fences are almost all of ditch and thorn hedge; the one serving as a ready conveyance to the water, and the other as a shelter for the cattle. Very few of the fences at Ury are composed of stones, notwithstanding the superabundance of that material, which lay originally at hand upon every ridge. But the stones, there, were little calculated for building, being all round, water-worn bullets, very inapplicable to a wall of any description, etther with or without mortar. Most of the thorn fences have thriven exceedingly. They are, in fact, too luxuriant, some of them being little less than twenty feet high. This height gives excellent shelter to the cattle; but has a bad effect upon the hedges themselves, as the lower part, being too much overshaded, becomes open and unfencible, and requires much care, by the application of paling from time to time, to keep the cattle properly confined. It has been remarked, in general, on this branch of Mr. Barclay's meliorations, that his fences have been more accurately constructed, and more attention paid to the rearing of them, in the latter part of his improvements, than in the beginning—a circumstance which ought to be expected, as his hedgers would naturally become more expert, and perform the operation more correctly, the longer they were accustomed to the work.

A circumstance in the construction of the gates is worthy of notice, which is, that the horizontal bars are set edgeways up and down, and thus afford, by their position, the greatest strength from a given weight of wood. This may seem so obviously the best mode, as to require no particular remark; yet it is astonishing how little such minutiæ are attended to.

6. *Rotation of Crops.*—After the lands were brought into tilth, and had a due application of lime, Mr. Barclay's first crop was oats; after which began his general rotation of a four years' course—1. Turnips; 2. Barley; 3. Clover and other grasses; 4. Wheat; then turnips as at first.

Though wheat is stated as the last in the course I shall begin with it—as part of the culture bestowed on it, in the course of the rotation, was preparatory to the crop of turnips which followed.

Wheat.—This was sown on one furrow from lea after the clover, the ground being previously dunged at the rate of twelve three-horse cartloads of well made farmyard muck to the English acre. The time of tillage was from the first of October to the middle of November; the quantity of seed nine pecks to the acre, or about two and one-third Winchester bushels. The produce varied considerably, according to the seasons. It was, in some years, not more than five bolls; in other years, it was ten: but on an average of years, it amounted to about six bolls and a half, or twenty-seven and a half Winchester bushels, from the English acre. The measure here understood is by the Stonehaven peas firlot of twenty-two Scots pints; being thus about three and a half per cent. more than the Linlithgow standard. Mr. Barclay, by the time his improvements had extended over most of his lands, had, in some years, 130 acres in wheat.

Turnips.—Mr. Barclay having applied the dung to the preceding crop of wheat, left nothing to be performed to the turnip land but the tillage only. This gave him a great advantage in the operations of that busy seed time, in which celerity in the progress is frequently more conducive to the prosperity of the crop than any other circumstance.

The ground, being brought into a complete state of pulverization by frequent ploughings, was sown, in the first and second weeks of June, by broadcast, at the rate of one pound weight of seed to the acre. This fashion of sowing the seed, Mr. Barclay had learned in Norfolk, and persevered in it to the last; and, from the very abundant crops which he always raised, it has become matter of doubt with some people, whether to sow broadcast, or in drills, the now general practice, be the most judicious and advantageous method. The greatest objection, perhaps, to the broadcast system, arises from the difficulty, in that mode of culture, of cleaning the land from weeds, as it admits of aid, neither from machinery, nor from the power of animal draught, to assist in the operation; but all must be performed by manual labor alone. Mr. Barclay's land, however, was previously so fully pulverized, and so free of all weeds, either from root or by seed, that very little hoeing was required. The only thing almost to be done, in his fields, was to set off the turnips, by thinning, to a proper distance; a work, indeed, that required no little dexterity. Mr. Barclay, however, had his people so well trained to this nice operation (in which he was remarkably expert himself,) that they could, each of them, go over half an acre in a day; so that, although he sometimes had 130 acres in turnips, the work of thinning, which was constantly done by the hoe, was always accomplished in due season. The crop, in consequence of thus meeting with no neglect, prospered exceedingly; and the plants set off by these different operations—first at three, then at six, and lastly at twelve inches distance, turnip from turnip—soon filled the whole surface, and grew to be a crop of from thirty to forty-five tons weight the English acre. The crop would indeed sometimes exceed the last, but never fell short of the first of these quantities. This vast supply of green food was consumed in two ways—in the fattening of cattle, and the feeding of sheep.

Cattle.—Of cattle, Mr. Barclay had two sets. One set of from five to seven years old, and weighing, each, from forty to sixty stones, at sixteen lib. to the stone Amsterdam, was bought in annually, in the months of July and August. The number of this class was from sixty to seventy, which were picked up in the different fairs in the country or neighborhood, at from 10 to 12*l.* a piece. They were first laid upon his clover fields, then on after grass from the first cutting; and in the course of the season had also a range over the whole stubble land, till about the middle of October, when he began to draw the turnips for them, from the different fields or enclosures under that crop. His method was to draw alternately from one half to two-thirds of the surface on the *best* of the land, and to leave the remainder to be eaten on the ground. On the inferior parts of the field, however, he left the whole to be thus consumed by the cattle or sheep (afterwards mentioned,) which continued on the spot while the crop lasted. By this method, the least fertile portions of the lands were rendered, for the succeeding crop, nearly as productive as the very best.

These cattle were never fed in houses or in stalls, but at all times in the open fields, to which the turnips were carted, and spread over the surface; and there enriched, by the manure droped, other parts of the grounds, to an extent equal to half of that on which turnips were produced. This practice, however, is not applicable to every situation. The general inclemency of the winter season would render out-doors' feeding impracticable in most cases. But the lands of Ury having a hanging exposure, open only to the south, and intersected by different glens or hollows, are remarkably well sheltered from the storm, from whatever direction it may come; and care was taken to shift the cattle from field to field as the weather required. The lands, too, are particularly dry; so that no bad consequence, from poaching, can arise either to them or to the cattle.

This lot of cattle was fattened off in the course of the winter, and sold, from time to time as they were ready, to butchers from Aberdeen, at from 15*l* to 18*l* each, then weighing from 50 to 72 stones a head. Some of a larger kind, bred by himself, were, after the turnips were done, kept on upon the grass till about the end of June, when, weighing, from 80 to 84 stones each, they were sold at from 20*l* to 21*l* a piece.

Mr Barclay had another set of cattle of an inferior sort, which he bought in, in the month of October yearly, to about the number of four score. They were generally three years old rising four, weighing from 30 to 40 stones, and cost from 7*l* to 8*l* each. These were put into the straw yard, for the purpose of consuming straw and making muck. They were, however, brought out occasionally to the turnip fields, and had a picking from those left by the larger oxen. They got from time to time a larger share, in proportion as the greater cattle were sold off; till, in the end, when the turnip crop was all expended, they were put on the pastures, and completed their feeding by the months of June or July, when they weighed from 40 to 50 stones, and were sold from ten guineas to 12*l* each.

Sheep.—Mr. Barclay bought in about three hundred wedders yearly, in the month of October, from the Highlands of Banffshire, by the water of Avon, in the parish of Kirkmichael. These were a healthy and hardy black-faced breed, weighed about 12 lib. a quarter, and cost about half a guinea a piece. They were first pastured upon the stubble grounds and after grass, till they learned to eat turnips, which were daily portioned out to them till they fed upon them freely. After this, they were taken from the pastures entirely, and put into the turnip fields, where they fed in flakes erected for the purpose, and in which they had a small quantity of hay in

racks. Both flakes and racks were movable, and were carried from field to field, and from place to place in the same field, as occasion required. These wedders were disposed of from time to time, as they got into condition; beginning by the first of January, and continuing to the first of April; by which time the whole were sold off. The price was from 14s. to 16s. each, and the weight from 13 to 14 lib. the quarter; the advance upon the price having arisen more from the rise in the value of mutton in the market, than from any advance in the weight of the animal.

Mr. Barclay had also a flock of from 250 to 300 breeding ewes, which he kept generally on the unimproved part of the estate, but brought occasionally, in severe weather in winter, to get a share also of the turnips. About 60 or 70 of the oldest of these were kept on the turnips the whole season over, till they had reared their lambs, which were in general so early ready, as to be sold, from the end of March to the beginning of May, at from 10 to 12s each--reckoned a high price then, about the year 1780. His method of rearing these lambs was somewhat singular They were kept constantly in the straw-yard, among clean litter, and under the shelter of a shed; but the dams were turned out to the fields to pick up their food among the turnips, from which they were brought home twice a day, and all night to give suck. By this means, the lambs were always kept under shelter from bad weather, which no doubt contributed to their thriving, and made them sooner ready for the market. After the turnips were all consumed, these ewes were turned to the pastures during the summer, where they got fat generally by the end of July, or beginning of August, when they were sold at about 12s. each.

The labor required in this system of feeding was wonderfully little. Three men, with two carts and four horses, served for the whole purpose of carting off the turnips. One man drove them off, with three horses into the cart, to the different places where they were to be spread. Two remained on the field, pulling the roots, and packing them in the cart, that remained with one horse. When the carter returned with the empty vehicle, he left it with the horse in the shafts, to to be filled in its turn, and with the two tracers now yoked before the other horse in the full cart, set off in full strength, with the loading. In this manner they wrought from morning to night; taking care always to leave the two carts full at night, to be early distributed in the morning, before a new supply could arrive. Two men more were sufficient to tend the whole quantity of sheep.

Barley.—This succeeded in rotation; and, from the fine order into which the land was previously put, never failed to be a good crop. The quantity of seed was eight pecks (about three and one-sixth Winchester bushels,) and the produce about seven bolls (about forty-four bushels) at an average, the English acre. The firlot from which the barley boll is measured, contains, in the vicinity of Ury, 33 Scots pints, which is about six per cent. above the Linlithgow standard.

It was with this crop that the seeds were sown for the succeeding clover crop at the rate of a bushel of rye-grass seeds, and from ten to twelve lib. of the seed of red clover. Such were the quantities used when the land was intended to be one year only in grass; but when it was meant to remain for pasture, there was added a portion of white and yellow clover, together with some rib grass seeds.

Clover.—This was the last crop in the rotation. About two-thirds of the land thus sown out were reserved for hay, for which the proportion of rye-grass sown among it properly fitted it. This was partly cut a second time in the same season, and partly pastured after the first crop was removed. The other third part was pastured from the beginning, as the great number of cattle kept on the lands required to be provided for accordingly.

In this manner, for two or three, and in some cases, four courses of this rotation did Mr. Barclay employ his improved lands. At last, however, he laid them down wholly in pasture; in which they continue to this day, being among the best in the country. The pasture grounds are let from year to year to cattle dealers, and fetch a rent of from forty shillings to two guineas and a half the English acre.

Plantations.—The most brilliant perhaps, of all Mr. Barclay's achievements, at least that which adorns the face of the country, was his plantations. These were formed at a moderate expense, and yet have every appearance of becoming the most valuable part of the property. And thus combining embellishment with utility, he obtained, at the least original disbursement, the most lucrative prospect in future.

Mr. Barclay, from the first, had a propensity to ornament Ury with growing timber. Even in the life time of his father, he projected and carried into effect some embellishment of this kind, in the vicinity of the mansion, which was then but scantily sheltered with wood, while there was not a single tree on any other part of the estate. This project, however, the old gentleman did not much relish; partly, because it was an inovation; and partly from a regard to the welfare of his sheep, which were thereby curtailed, in some measure, of their pasture. Young Mr. Barclay, however, persevered in his intention; but was obliged to cumpro mise the matter with the sheep, by leaving them free access to the pasture; which put him to the charge of fencing each tree with three stakes and connecting paling, to guard it against depredation. This young wood prospered greatly; and many beautiful trees in it are still pointed out, which he planted with his own hands. This happened about the year 1756.

This successful experiment encouraged him to extend his plantations; which he did upon a great scale, when, in a few years, he came to the possession of the estate, and had the means of gratifying, uncontrolled, his taste for this ornamental branch of husbandry. The ground which he first fixed on for this purpose, was the banks of the water of Cowie; which, as already stated, flows for about three miles through the lands of Ury. Through this whole extent, there is a bank shelving on each sided towards the stream, on an angle more or less acute, but all too steep for tillage. These banks are, in some places, thirty yards in breadth, and in others, one hundred yards or more, from the water edge to the top of the declivity. Both sides taken together, will at an average, extend to about one hundred yards in breadth on the base; and thus in the course of three miles, will amount to fully one hundred acres.

The whole of this is thickly planted with deciduous trees, or what is here called hard wood; in distincti on from the evergreen or firs, whose timber is comparatively softer and of less value. There are, indeed, a few spruce and silver firs planted near the upper margin, to afford shelter in that more exposed situation. But through nine parts in ten of the whole plantation, there is only hard wood, such oak, ash, elm, &c. These are abundantly sheltered by the natural warmth of the hollow, which is rendered still more mild from its various windings, occasioning one part to be continually protected under cover of another, from whatever quarter the wind may blow. Nothing can exceed the prosperous state of this beautiful plantation. Many of trees are already nine or ten inches in diameter, and from twenty to thirty feet in height below the branches; and there does not appaar to be a misthrven one among the whole; amounting to perhaps 400,000; but there is every rational prospect of, at least, one fourth part coming to complete maturity. The ultimate value must be very great; nor can that prospect be at any great distance of time. In less than half a century hence, the timber wood on this river side (extending to the moderate quantity of 100 acres) will be worth more than all the conterminous 900 acres of areable land put together;—perhaps to more than even the whole arable part of the Ury estate. This assertion will not be deemed too rash, when we reflect that hard wood is now selling at from three to five shillings the cubic foot; and that many thousands of the trees in this plantation contain already more than ten cubic feet of timber each.

It has already been said, that this improvement was obtained at a moderate expense. The precise amount, however, cannot, at this distance of time, be ascertained; but it is not difficult to conceive pretty correctly what it might be. The disbursments, which neither included trench-ploughing, lime, nor removal of stones, would be limited, 1st, to draining of the swamps that originally existed in various places in the banks, and which, from the sloping situation, would admit of great facility in the operation; 2d, of enclosing with dich and hedge; 3d, of the value of the young plants; and, lastly, of the labor of pitting and planting them;—all which, at the moderate rates that prevailed thirty-five or forty years ago, may be safely es-

timated at a sum not exceeding two pounds the acre, or £200 in all.

Again, the annual value of the land thus given up to planting, falls to be added to the estimate, which will be the greatest article in the account. But this will not, after all, exceed 20*l* a year, or 4s. the acre; which considering the general worthlessness of the pasture, conjoined with its general inaccessibility, will not be deemed too low a rent. If we take the pains to calculate, on the common principles of arithmetic, what all this may amount to, at compound interest, forborne 70 years, we may, from what is already seen, set down as the period of perfection in the wood—it will come to £17,856. But this sum, considerable as it may in this view appear, is little indeed, compared with the value of 100,000 trees, that may then be reasonably expected to have attained to such a state of maturity as to be worth more than twenty shillings each, at an average.

Besides this plantation on the banks of the Cowie, there are others of hard wood in various clumps, belts and hedgerows, around several of the enclosures. There is likewise a beautiful den, planted partly with hard wood, by a small rivulet which flows from the north towards the house of Ury. Altogether, in this den, and in the different clumps, belts and hedgerows, there may be about sixty acres of plantation; and of this there may be about one-third part of hard wood, with two-thirds of different kinds of fir intermixed. The whole is in a very prosperous condition; and, besides being highly ornamental, and affording much shelter, must ultimately be of great value.

The most extensive, however, of the woods of Ury are entirely of fir, upon the hill sides and hill tops of what may be called the back ground of the improved part of the estate. There, Mr. Barclay has planted upwards of eight hundred acres. These hills, thus clothed with wood, being of considerable altitude and seen from far, have a very happy effect in enlivening the general aspect of the country. The wood itself, however, is not all thriving. In the lower parts of the hills, where the soil is tolerably good, and where the exposure is not too severe, the firs are doing well, and have every apperance of being valuable; but, further up the hill, they get worse and worse; till, at the utmost summit, they have nearly failed altogether. This is owing, in a great measure, to the extreme sterility of the soil on these high and bleak situations; but in part also, to Mr. Barclay himself having made an improper selection of the kind of wood. He had an ill-judged partiality for the Scotch fir, esteeming it the most hardy of the pine race, and the most adapted to the climate of the country. This induced him to plant these more exposed places, almost exclusively, with this kind. Time, however, has shown, that the Scotch fir is not all a hardy plant, but among the most delicate and feeble of the fir species; and will thrive no where, unless it be in some favorite situation, such as in the deep glens in the interior of the highlands where, there can be no question, it grows to a large size, and is a most valuable timber. In all plantions however, along the eastern coast, the larix seems a much more hardy tree, and better adapted for an alpine exposure. Of this there is a striking example to be met with at Ury itself; where a small plot, planted with larix on the top of one of the hills, continues still vigorous and thriving: while all around, the feeble Scotch firs, after thriving a few years against the sterility of the soil, and the coldness of the exposure, have dwindled down to the size of juniper bushes.

It may be observed, with regard to the plantations on the hilly parts of Ury, that although they cannot be compared with those raised on the lower grounds, yet there is still such a considerable proportion that continue in a thriving condition, as must make them, on the whole, a very profitable concern. The original expense of planting would probably not exceed 15s. the acre; while the value of the pasture on such a wretched soil, can hardly be estimated at any thing at all. So that the whole expense, even calculating it on compound interest to the present day would not exceed £2500; a sum far less than the present value of the thriving part of the plantation, were it appreciated at only sixpence a tree.

When Mr. Barclay commenced his operations, in the year 1760, he employed only the people of the country, that were bred on his own lands, or in the vicinity. At this time the scene of his improvements was very limited in extent, and the number of his work people not great. But in proportion as he acquired the occupation of more of his own lands, his improvements expanded more widely; and more people, from the neighborhood, to carry them on, were required. These, however, were of a cast not altogether to his mind; for he did not meet with that alert service from them that that corresponded with his own ideas of activity. This set him upon getting servants from a more enlightened part of the country; and accordingly he engaged some from the county of Norfolk in England. With the assistance of these English servants, he set himself to the training of his own people to a more dexterous habit of working, and to a more thorough knowledge of his operations; some of which, such as draining, hoeing, planting, enclosing &c. were entirely new; and all of them being on an improved principle, were of course so far an alteration of the common practice. His discipline was severe, but it was very correct. He would admit of no slovenly practice—no slighting of the work. Nor did he require any thing of his people but what he could do himself; for while he delivered out his directions in the most clear and distinct manner, he could, with his own hand, show them the true mode of performance. He could even enforce his authority with something more effective than verbal injunctions; for it is said that the clownish obstinacy of his people was not unfrequently corrected by manual discipline. I have indeed met with different people that confess (and even in some measure glory in it,) that they had the knowledge of their work beat into them by Mr. Barclay. This strict government had the happiest consequences; for not a little of the general dexterity (to be afterwards noticed) in the Kincardineshire laborers, is still to be traced to the original system of their *education*, established by Mr. Barclay of Ury. His establishments was indeed very extensive. At Ury alone, he had, in general, from 40 to 60 people constantly employed, either in the common operations of husbandry, or in the extraordinary work of improvement. He employed also from 24 to 32 work horses. He never employed oxen. He could endure no sluggish motion; and his operations were all conducted in a style of too much celerity to admit of the slow pace of the ox.

Along with his Englishmen from Norfolk, he imported several of the Norfolk implements of husbandry; more especially the wheeled plough, and large eight horse wagon. The first of these, as being unquestionably the most correct implement of tillage, at the time, met with a favorable reception in the country, and soon spread to a considerable distance. The more simple and equally effective Scotch plough, improved by Small, has now, however, almost entirely superseded it. The large wagon never came into general use; nor did it extend its influence beyond Mr. Barclay's own lands. It is too expensive and too unwieldy a machine to obtain much footing in Scotland.

Mr. Barclay's operations, however extensive on the lands of Ury, were by no means limited to that estate. His improving hand was stretched over a much larger expanse of country. On his other lands of Allardice, Hallgreen and Davo, situated about ten or twelve miles from Ury, he made many essential meliorations; though not to such an extent as upon Ury, which, being his favorite place of residence, he exerted himself more strenuously towards the decoration. He had also different places in lease to which his improvements were extended.

If we confine our ideas of the benefit conferred on the county, by Mr. Barclay's improvements, to the meliorations which he effected on the lands actually under his own management, his exertions, in this respect, must rank him high in the view of every intelligent and reflecting mind. But his value, as a cultivator, was not so circumscribed. There are other circumstances, that, as an agriculturist, have extended much further the circle of his usefulness. Among these may be stated the happy consequences, arising from his having instructed so many of his laborers in the most correct mode of cultivation, who, diverging in various directions, have carried the knowledge, thus acquired, to every place where they have been employed. To have been in the service of Mr. Barclay, always was, and still is, a great recommendation to any servant. Some of these have even advanced themselves into a higher class, and are distinguished as tenants, by a spirit of industry and exertion becoming the disciples of such a great master. His example all along, had also a wide and extensive range. The fame of his improvements spread far; and the light thence diffused, has beamed in a thousand directions over the face of the whole land.

Comparative value.—What may be the real value to the estate itself of Ury, from the improvements made on it by Mr. Barclay, is perhaps not very easy to ascertain.

The only facts on the subject that I have to state are 1st, that 47 years ago, when Mr. Barclay succeeded to the property, the rent of all that part of the estate which he afterwards improved, was £200 a year. 2d. that the rent now of the pastures, as they come, to be let, year by year, runs from £2 to £2 12s. 6d. the English acre. The quantity of improved land is 903 acres; of which, about 300 acres were entirely waste land, and afforded no rent at all. The improved land, however, is not all in pasture. There are three farms, comprehending 334 acres, which are under lease at a rent of from 25s. to 30s. the acre. The rent, however, of the whole estate, amounts to about £1650 a year; and there can be little question that, were it now to let, it would bring £1800, or nine times its original value. It must not however be disguised, that, owing to the fall of the value of money this property would have rented, at present though there had not a single improvement been made on it, at £400 a year. But this at all events, leaves £1400 a year, as the increase of rent made by these improvements alone, on this part of the property. Now, though it should be made to appear that Mr. Barclay's improvements should have cost him even more than a principal equal to the above £1400 as interest, yet, as there still remains the value of the plantations—a value that is rapidly increasing—there can be no doubt whatever that Mr. Barclay augmented his fortune by his improvements, very considerably indeed.

Mr. Barclay began his operations in the year 1760; and continued unremittingly to improve and embellish till about 1795. A year previous to this, being elected member of parliament for the county, in the room of Lord Adam Gordon, a stop was put, in a great measure, to his agricultural pursuits. He died April 8th, 1797, in the 67th year of his age.

From the Farmer and Gardener.

GREAT SALE OF SHORT-HORN DURHAMS.

We record below the *account sales* of the stock of the above breed of cattle imported by "*The Ohio Company for importing English cattle,*" which took place at Indian Creek farm, the residence of the Company's agent, in Ross county, Ohio, on the 29th of last month. The prices at which this fine herd of cattle sold, will appear high to those who have been in the habit of estimating the value of cattle at the old standard of native breeds; but those who may be conversant with the estimable qualities of the improved Short-horn Durhams, will know too well how to appreciate them to be surprised at the prices the present lot brought. The western country are now in possession of as fine a stock of neat cattle, the numbers being considered, as are possessed by any other portion of the world. Those which have just been disposed of by this enterprising company, were selected in England from the finest herds, by competent judges, and doubtless comprised the best animals that could be procured in the British empire. We congratulate the generous and patriotic people of the great west upon this solid acquisition to their theretofore noble stock, and we sincerely *trust* that the public spirited agriculturists, who have thus come forward with such true nobility of soul, to reward the thrice laudable enterprize of the Ohio company, will find that their own exertions to improve the stock of their respective sections of country, will meet with a becoming response from their brother farmers. But of that we do not apprehend any doubt; for the success which the *Bulls* that the Ohio Company sent out to service in their own, and sister State of Kentucky, the past season, is at once the bond and guarantee that a like good fortune will await the present owners. As far back as May last, we learned that one of the Durham bulls owned by the Ohio Company, which had been sent to Clarke county, Kentucky, for service, had at that early period of the season had 60 cows at $25 each: and, indeed, our private advices go to show, that all the Durham bulls of unexceptionable pedigrees, both in Ohio and Kentucky, were doing full service at rates ranging from $10, 15, 20 to $25 each cow.

Such encouragement was due to the enlightened enterprise which influenced the gentlemen to encounter the expense and risk of importation, and reflects the highest credit upon the liberality of the people of the west. While we record such evidences of their enlightened views, we feel it due to the occasion to say, that it is by such deeds they have outstripped their neighbors this side the Alleghanies, and earned for their section of country the well deserved appellation of *The Great West;* for great must that country be whose patriotic people are impelled onward by such generous impulses—impulses which know no restrictive measure—nor recognise no mean limit of dollars and cents—compared with the advancement of their agricultural resources and the improvement of their domestic animals.

In looking at those sales one is struck with astonishment at the tardy pace that has marked the spread of this generous breed of animals throughout our country, and how much, the more wealthy of our agriculturists have been at war with their interests.—Having said thus much, we will leave it to our readers to draw their own conclusions with respect to the advantages which are likely to enure to them from introducing this peculiar breed of cattle on their estates:

SALE OF SHORT-HORNS,

Imported by the *Ohio Company for Importing English Cattle,* in the years 1834, 1835, and 1836—held at Indian Creek Farm, the residence of Felix Renick, Esq., Agent of the said Company, in Ross county, on the 29th day of October, 1836.—The Stock of the Company was in fine condition and in great demand.

☞ Notwithstanding the high prices at which the Cattle were sold, some of them exchanged owners immediately, at very considerable advances; and for others, more than fifty per cent. on their cost was offered and refused.

Reformer, a bull, not sound, sold to John T. Webb, of Ross county, Ohio, for $48.

Matchem, a bull, sold to Abraham Renick, of Kentucky, for $1200.

Earl of Darlington, sold to Batteal Harrison, of Fayette county, Ohio, for $710.

Young Waterloo, a bull, sold to R. D. Lilley, of Highland county, Ohio, for $1250.

Duke of York, a bull, sold to R. R. Seymour, of Ross county, Ohio, for $1120.

Experiment, a bull, sold to James M. Trimble, of Highland county, Ohio, for $1150.

Comet Halley, a bull, sold to R. R. Seymour, of Ross county, Ohio, for $1505.

Whitaker, a bull, sold to William M. Anderson, of Ross county, Ohio, for $855.

Nimrod, a bull, sold to Elias Florence, of Pickaway county, Ohio, for $1040.

Duke of Norfolk, a bull, sold to Robert Stewart, of Ross county, Ohio, for $1255.

Goldfinder, a bull, sold to Isaac Cunningham, of Kentucky, for $1095. Afterwards sold at private sale to Gen. Vance and J. H. James, of Champaign county, Ohio, for $1400.

Duke of Leeds, sold to John Crouse, jr., of Ross county, Ohio, for $575.

Windham, a bull, sold to Charles Davis, of Ross county, Ohio, for $500.

Columbus, a bull, (not sound) sold to Thomas Huston, of Pickaway county, Ohio, for $180.

Davy Crocket, a bull, sold to Peter L. Ayres, of Ohio, for $490.

Snowdrop, a bull, sold to Stewart & M'Neil, of Ross county, Ohio, for $480.

Independence, a bull, sold to Heglar & Peterson, of Ross county, Ohio, for $400.

Perry, a bull, sold to William H. Creighton, of Madison county, Ohio, for $400.

Goliah, a bull, sold to Isaac V. Cunningham, of Sciota, for $300.

Logan, a bull, sold to Elias Florence, of Pickaway county, Ohio, for $750.

John Bull, a bull, sold to William Renick, jr., of Pickaway county, Ohio, for $615.

Paragon, a bull, presented by the company to Felix Renick, Esq., their agent.

Powhatan, a bull, sold to George Renick, sen., of Ross county, with Flora.

Rantipole, a bull, sold to Arthur Watts, of Ross county, Ohio, for $810.

Gaudy, cow, sold to James A. Trimble, of Highland county, Ohio, for $985.

Blossom, cow, sold to R. R. Seymour, of Ross county, Ohio, for $1000.

Flora and her calf Powhattan, were sold to George Renick, sen., of Ross county, for $1205.

Lilly of the Valley of Tees, sold to Thos. Huston, of Pickaway county, for $950.

Matilda, sold to Arthur Watts, of Ross county, for $1000.

Calypso, cow, sold to Strawder M'Neil, of Ross county, for $325.

Young Mary and her calf Pocahontas, were sold to Edwin J. Harness, of Ross county, for $1500.

Lady Blanch, (no proof of this cow being a breeder,) sold to Charles Davis, of Ross county, for $250.

Tees Watar and her calf Cometess, sold to John I. Van Metre, of Pike county, Ohio, for $2,225.

Duchess of Liverpool, sold to William M. Anderson, of Ross county, for $570.

Lady Colling, (it is doubted whether this cow will ever be a breeder,) sold to John T. Webb, of Ross county, for $205.

Beauty of the West, sold to Ashel Renick, of Pickaway county, Ohio, for $900.

Lilac, sold to Elias Florence, of Pickaway county, for $425.

Lady of the Lake, sold to R. R. Seymour, of Ross county, for $775.

Lady Paley, sold to Alexander Renick, of Ross county, for $510.

Poppy, sold to Harness Renick, of Pickaway county, for $610.

Pink, sold to William Trimble, of Highland county, for $575.

May Flower, sold to Batteal Harrison, of Fayette county, Ohio, for $405.

Lucy, (pedigree doubtful) sold to George Radcliff, of Pickaway county, for $105.

Moss Rose, sold to Jonathan Renick, of Pickaway county, for $1200.

Celestina, sold to Thomas Huston, of Pickaway county, for $930.

Malina, sold to Isaac Cunningham, for $1005.

Illustrious, sold to Abraham Renick, of Kentucky, for $775.

Lady Abernethy, sold to Thomas Huston, of Pickaway county, Ohio, for $815.

J. L. TAYLOR.
Sec'y of the Ohio Importing Company.
[Scioto Gazette.]

From the Farmers' Register.

EXTRACTS FROM THE REPORT OF PROFESSOR DUCATEL'S SURVEY OF MARYLAND.

Geological Examination of Dorchester, Somerset, and Worcester Counties, on the Eastern Shore of Maryland.

These three counties, comprising more than one-third of the territory of Maryland, east of the Chesapeake bay, though presenting but little variety in their mineralogical and geological features, are yet not devoid of interest in these respects, while in others they offer subjects of consideration of the deepest importance to the prosperity of the State.

The most prominent geological feature in this district is a succession of sandy hillocks, in what are termed the upper portions of these counties, being a continuation of the ridge dividing the courses of the waters that empty themselves to the east into the bay of Delaware, and to the west into the Chesapeake. These hills of sand are themselves arranged in ridges, running generally north-east and south-west, diminishing in elevation towards the southern extremity of the peninsula, forming a curve on its eastern boundary, and presenting every appearance of a series of sandy beaches produced by successive retreats of an ocean. No organic remains of any kind are known to have been found within this portion of our territory, excepting a deposite of oyster shells at the head of Taylor's Creek, two miles above the fork of the Nanticoke, and ten miles below the fossiliferous deposite occurring on the north-west branch of this river, and previously referred to as the newer pliocene formation. This deposite is overlaid by soil six feet in depth. The shells contained in it are much in the same condition as those occurring in the accumulations supposed to have been made by the aboriginal inhabitants of the country; *i. e.* the valves are separated, and are not, so far as perceived, associated with any other marine shells.—They are, however, perforated and covered with *serpulæ*, as if they had lain long, after the death of their inhabitants, at the bottom of the sea. But they are at a great distance from any actual oyster beds, and are in a more advanced state of disintegration than the fossil oysters heretofore observed; whilst, on the other hand, they are covered, as aforesaid, by a thick stratum of sand, no where else remarked to overlie Indian banks.

The lower portion of the peninsula lying in Maryland, embracing Dorchester, Somerset, and Worcester, is a low level country, mostly a deposite of stiff clay, excepting on the margin of the rivers and creeks, where the country is wavy and the soil sandy. The sand hills, on the borders of the rivers, are always situated on their south or south-eastern sides, and extend but a short distance inland. In some instances they form distinct ridges or waves of sand, running in various directions; sometimes parallel with the course of the river, and when occurring at the extremity of necks, transversely, or across the points. The intervening necks, sloping gently to the south and south-east, terminate in extensive marshes, which in high tides are frequently entirely submerged. In the midst of these marshes there are occasional sand hills, or hummocks; but rarely of any great extent.

The sameness in the geological constitution of the necks of land, just referred to, is evinced in the digging of wells, from which this section of country is exclusively supplied with water for domestic purposes. At a depth of from ten to twelve feet, penetrating through the stiff clay, there is invariably encountered a stratum of clean white sand, with gravel, varying from one, to two or three feet in thickness. Out of this an abundant supply of good water can be obtained; but beneath it there is always found a soft black mud, with an offensive odor, and filled with decayed vegetable matter, composed principally of a coarse grass, similar to that growing upon the present marshes. In some places this mud is reported to be of great depth. It does not appear, however, to have ever been accurately sounded; but in one instance, already alluded to in a previous report, at Cambridge, it was traversed, and is stated to have been found overlaying a fossil deposite, the shells of which are referable to the older pliocene marls.

Another remarkable feature in the geology of this country is the occurrence of a ledge of water-worn stones, composed of quartz and sandstone, constituting gravel and boulders of various sizes, from twenty to several hundred pounds in weight.—These stones were first observed between Todd's Point and at the head of Little Choptank; they were afterwards found scattered over a narrow zone of land, between Monie Creek and the Manokin.—They are said to occur at the head of Back Creek, on the south side of Manokin, and were finally again observed near the mouth of Marumsco Creek, on Pocomoke Bay. At this last mentioned spot—being a knoll of dry ground in the marshes, protruding into the bay—the beach is covered with these stones, washing out of the bank. All of them are a close grained sandstone, with small veins of quartz, the sandstone being of the character of that occurring on the Blue Ridge, different from that constituting the *white rocks* at the mouth of the Patapsco, but similar to those larger masses that are found strewed over the surface in the upper parts of the Eastern Shore of Maryland, in Cecil county. These eratic masses form, with the exception of the bog iron ore—which will be presently more particularly referred to—the only stony bodies that occur in the three Eastern Shore counties, now under examination.*

Such are the great geological features of this section of country. A more detailed account of its physical geography will now be given under separate heads, for each of the three counties embraced within it.

Dorchester County, lying between the Choptank and Nanticoke rivers, requires perhaps more than any other county on the Eastern Shore, the assistance which would necessarily be afforded by an accurate topographical survey, in adopting measures to bring into operation her natural resources. Placed between two large rivers, her facilities for sending the produce of her soil to a market are yet not great, and mostly confined to the least productive part of her territory. The central portion of the county, most susceptible of great and permanent improvement, and even at this time the most productive, is deprived of an outlet for her agricultural staples, corn and wheat; and the no less valuable source of wealth, which she possesses, in her magnificent growth of timber. The natural channels of egress through the Blackwater and Transquaking have long since failed to be available in any thing more than a limited degree, these rivers serving now rather to increase the obstacles to the navigation of the bay into which they empty. Fishing Bay, their common estuary, offers scarcely more than five feet of water, at high tides, over a deep and extensive mud flat, which it is utterly impracticable to remove. The inconvenience arising from this cause is felt by a large portion of the county, and has suggested the application to the legislature, for the opening of a canal communication between the Blackwater and the Choptank. Such a canal would but partially remedy the inconvenience, whilst a more comprehensive view of the benefit to be derived, points to the practicability of connecting the Nanticoke with the Choptank. This is believed to be entirely practicable, and the advantages to be obtained from the connection of these two rivers, by means of a canal traversing the heads of navigation of the Blackwater, Transquaking and Chicamacomico—a project to be effected at a trifling expense—are great and obvious. A communication of this kind would not only furnish an outlet for the already valuable products of the county,

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* A ledge of submarine rock is said to be off Todd's Point; and another to Benoni's Point, on the Talbot side of the Choptank.

but could be used as a means of conveying to it those materials, such as marl, lime, &c. (of which an abundance would be thus brought within a convenient reach,) that are necessary in order to enhance the productiveness of its soil, and bring it into that state of improvement of which it is susceptible. Other advantages may be expected to accrue from the excavation of a canal in the direction just referred to; among which, not the least important would be to render it subservient to the effectual and thorough drainage of a large extent of country, at present uncultivable, and not only itself insalubrious, but the main cause of the unhealthiness of that by which it is surrounded. It would seem to be at all times a subject worthy of the attention of a government that wishes to increase the quantity of nutriment, as well as to improve the salubrity of a country, and consequently to augment its population and prosperity, to employ suitable means to effect a complete drainage of every morassy district, within its dominion, of whatever extent.—In the present case the proposed improvement forms, however, only part of a scheme of internal navigation that might, it is believed, be advantageously pursued for the benefit of a large portion of the Eastern Shore of Maryland.

In the upper part of Dorchester county, the soil is mostly a sandy loam, well adapted, with proper management, to the growth of corn, rye, and oats. The character of soil belongs more especially to those portions lying on the rivers, and extends, with very few exceptions, over a narrow slip of land on the Choptank, as far as Hill's Point, on the bay shore. The neck between the Big and Little Choptank is a low flat country, mostly composed of a stiff clay soil, covered with a plentiful growth of pine, sweet-gum, oak and dogwood, but suffering greatly from a want of convenient drainage; an evil that might be remedied, and by which thousands of acres of land, now of little value, would be reclaimed and rendered fit for cultivation. With the advantages possessed by this section of country, in her now extensive deposites of shells on the river banks, her sea-ooze, together with her proximity and easy access to the marl deposites of Talbot county, it ought to become one of the most productive and flourishing portions of the State.

The necks and islands, forming the western and south-western portions of the country, likewise present us with low and level lands and a stiff clay soil, mostly well timbered with pine, white, black, and willow oak, sweet-gum, &c. The situations on the islands are delightful and generally reputed healthy.

Meekin's Neck, on the bay shore, is marshy, and this is the case of nearly one half of Hooper's Island, the extent of which is nearly fourteen miles in length, and from one to two in breadth; such portions of the island as are arable have a productive soil. At the head of Honga river and bay, there are extensive meadows; and where the soil, also a clayey loam, is cultivated, it is said, to yield abundantly. Bishops-head Neck offers the same character of soil and physical aspect. Throughout the whole of this district the depth of wells is rarely found to exceed ten feet, penetrating the clay to sand, from which the water issues, seldom perfectly clear, and occasionally slightly brackish.

At the heads of Big and Little Blackwater Rivers there are also extensive marshes; the country is very level, low and swampy; the soil a stiff clay; timber principally oaks and sweet-gum. Between the Blackwater and Transquaking, around Buckstown, the country is more elevated, the soil lighter, with a growth of very large oaks and American poplars. The wells here are sunk to the depth of twelve feet, through clay, reaching gravel and sand.

Towards the head of the Transquaking, and between it and the Chicamacomico, the soil is a clay-loam, that would yield very good crops of grain, if properly improved. Beyond the Chicamacomico the country is more uneven, the soil lighter, sometimes sandy, the level of the country rising towards Vienna. Wherever the soil is stiff, it is covered by a heavy growth of oaks and gum.

Hurley's Neck, along the Nanticoke, south of Vienna, is a level stiff clay, well wooded, for the distance of about seven miles, after which it terminates in an extensive marsh.

No fossil deposites, similar to those occurring so abundantly north of the Choptank, have been discovered in Dorchester county, that would answer for agricultural purposes; but the large accumulations of shells found at Horn Point, at Oyster-shell Point, and other places, together with the deposite on Taylor's Creek, already referred to, might be made eminently serviceable if burnt into lime. The only mineral formations of any value are the deposites of bog-ore, at the heads of Transquaking and Chicamacomico, and on Reedy Creek, in the vicinity of Federalsburg. This ore is compact, heavy, free from phosphate of iron, and would probably yield from 40 to 50 per cent. of good metal. Some inclination having been manifested by an enterprising proprietor of an extensive deposite of ore, on the Chicamacomico, to work it in place, it was thought more advisable to recommend that it should be forwarded to the Baltimore market, where it would probably command from $3 to $4 a ton.

Somerset county presents, in its physical geography, as might have been expected, great features of resemblance with the county that has just been described. Its upper portions are very sandy and rolling—a succession in fact of sand hills, gently inclining to the south, and terminating in a level deposite of stiff clay—as if at one time this part of the country had been a sea beach, from which the waters have receded to a considerable distance beyond the mud flats that formed at the same period of time the shallow bottom of the ocean, and extended several miles from her shores.—But what is here supposed to have been formerly an extensive mud flat, is now a populous country, in many places well cultivated, every where very improvable, possessing a productive soil, well timbered, and intersected by numerous creeks and rivers. These form the *necks* of the county, falling by an imperceptible slope into marshes many miles in extent, with here and there a hummock, crowned with some lofty pines, or a herd of grazing cattle looming against the horizon, to relieve the monotony of the scenery. The waters of the sound, by which these marshes are limited, are not seen, unless perhaps from the top of some hummock, and are only indicated by the occasional passage of some skiff, whose white swollen sails contrast agreeably with the luxuriant dark-green growth of these grassy plains.

Without having reason to believe that the waters of the Chesapeake bay have absolutely diminished, it is nevertheless true that the amount of dry land is increasing on the Eastern Shore of Maryland, by the filling up of creeks, rivers, and small bays, at the confluence of its muddy streams. The flats of Fishing Bay and Pocomoke Bay furnish us with examples of this, upon a sufficiently large scale, to produce, in no great lapse of time, very remarkable changes in the geography of this part of our territory.

That portion of the neck of land lying between the Nanticoke and the Wicomico, and contiguous to the former river, is within a narrow stripe, wavy and sandy, inclining moderately to the S. E., and terminating in marshes. The intervening country is level, with a stiff clay soil; this being the character, as must already have been perceived, of all those portions of the Eastern Shore, comprised within what are termed the necks. Generally speaking, the N. and N. W. parts of these necks, extending along the rivers and creeks, have a light soil; in the central portions, the soil is clayey, and the S. and S. E. extremities are marshy; such is the character of Hungry Neck, between the Wicomico River and Monie Creek, and the description will answer for the Manokin Neck; though in this there does not appear to be the same uniformity in the character of the clay, which varies from a white and yellow stiff clay, to a black clayey loam, equally various in its degrees of productiveness and in the kinds of crops which it can be made profitably to yield. The upper parts of this neck are covered with magnificent oaks, sweet gums, maples and beech; the lower portions support a growth of lofty pines, with an undergrowth of holly and sweet-gum, and verging upon the marshes, that extend across the neck from the Wicomico to the Manokin, the pines are small, probably a new growth. The soil of the lands that terminate the neck—Big and Little Beele's Islands—on the north-west side, is a sandy loam, very productive in corn and sweet potatoes.

The aspect of the country between the Manokin and Annemessex, presents us with the usual almost dead level of clayey soil, covered partly with oaks, sweet gum, maple, &c., the pine predominating towards the lower end, and on approaching the marshes, the timber having been in a great measure destroyed, there remains but a scanty growth of small pines. The extensive marshes, called the Jericho marshes

form the extreme end of the necks, on the borders, and in the midst of which, are some few inhabited spots, more remarkable for their great salubrity, than, as might perhaps have been supposed, for the dreariness of their situations. To become convinced that health and comfort are sometimes found where they are very little expected, it is only necessary to pay a visit to the hospitable residence of Capt. Davy, at the head of the salt marshes of Jericho.

Annemessex Neck, whose soil and appearance would require the same description as that already given of similar portions of the country, is thickly settled towards the lower end, by a hardy population of boat-builders and boatmen; the latter supporting themselves principally by the sale of oysters, clams, and terrapins. These men may be instanced as further evidences of the healthiness of the marshy districts of country upon salt water. Whatever may be the influence of these marshes at a distance, judging from the appearance alone of those who inhabit them, or constantly frequent them, they are not the seats of disease; for it would be difficult, in any other section of our country, to find a more hardy and robust set of men, than the residents on the Little Annemessex; and yet it is not to all that the praise of unexceptionable habits can be extended.

From the head of Little Annemessex, the eye looks over the broad expanse of salt marshes, reaching to the southern limits of our State—Watkin's Point being lost somewhere among them. Bounding these marshes to the north, there is a well wooded country, with a good soil and highly improvable, extending to the Pocomoke Bay and River, and comprising the district, of Rehoboth. Marumsco Neck, towards the latter district, is also well wooded, the country and level, soil generally clay loam, in some places at the head of creeks more uneven and sandy.

Such is the account, and it will, it is believed, be found substantially correct, that may be given of the lowest portions of Somerset county. It has already been said, that the northern part of the country is sandy. It is especial y so between Barren creek, and Salisbury; but from Barren creek, in the direction of Quantico, to Whitehaven, the soil passes from a sandy loam to the stiff clay bottoms, described as forming the principal soil of the necks. Along the Wicomico river, on either side, the soil is mostly sandy. On the eastern side of this river, and reaching from it towards the south, the soil varies from sandy, sandy loam to clay loam; and a northerly direction from Princess Anne to Salisbury leads successively over clay, clayey loam, sandy loam, and through a swampy district, to the sand ridges of the upper portion of the county.

The only mineral product of Somerset county is *bog-ore*, of which there is an abundant deposite, of excellent quality, at the head of Barren Creek. It has been raised in considerable quantity, and continues to be profitably extracted by Mr. Brattan, who delivers it at Baltimore for $3 the ton. A large supply of this ore might be obtained from this and other neighboring localities. It is also found at the heads of Back and Dividing Creeks; but samples examined from these places indicate an inferior quality of ore.

The mineral springs of Barren Creek deserve more attention than they have lately received. The waters have been analyzed, and were found to contain oxide of iron, soda, and magnesia, combined with muriatic acid. They belong therefore, to the class of alkaline chalybeates, are tonic and diuretic, and have been found eminently serviceable in billious disorders. The well known curative properties of the waters, the comfortable accommodations at the springs, with the obliging disposition of the proprietor, and of the tenant, Mr. Levin L. Porter, ought to furnish strong inducements, to invalids of the Eastern Shore of Maryland, to resort to them now, as they were wont to do in former times.

No fossil deposites, answering as marl, have been found in Somerset county; but a material almost as valuable occurs abundantly in various places, constituting those accumulations of oyster shells, believed to have been made on the site of ancient Indian settlements. The spots upon which these shell banks were observed, are, on the Nanticoke, at the mouth of Witipquin Creek, and at the Sandflea Landing; on the Wicomico, at Long Point, where there occurs one of the most extensive banks of the kind known, the shells therein, being deposited at the depth of from three to nine feet, extending nearly a quarter of a mile along the shore, and several hundred yards inland; on the Manokin, Maddox island and Fishing island are covered by similar accumulations; and on the Pocomoke, another occurs at Shelltown, about two miles above the mouth of the river. Banks of the same kind are found in other places, but of a more limited extent.

The value of this material has already been stated in a preceding report, but it cannot be too strongly impressed upon the farmers of the lower counties on the Eastern Shore of Maryland. *It is the principal agricultural resource which they possess, by a proper application of which they may double the produce of their lands.* In the upper counties of the Eastern Shore, where the worth of the material is appreciated, it is made to undergo two operations: it is passed through a coarse sieve, in order to separate the black highly fertilizing mould with which the shells are associated, and the fine fragments of these; the coarse clean shells are then burnt into lime. The sifted article readily commands from three to four cents a bushel: the lime sells at from six to nine cents, according to its quality. By referring to the section "On the comparative value of shell lime and stone lime," your Excellency will perceive that the difference in value, between the two articles, for agricultural purposes, is very trifling, whilst the difference in price is considerable. Can any farmer doubt that the discovery, on the Eastern Shore, of limestone quarries even of moderate extent, and to be used solely for the conversion of the stone into lime, would be of immense benefit to the country? The equivalents of such quarries are found in the shell banks that have just been indicated. They should no longer be neglected.

Worcester county has long felt the want of some parental assistance, to enable her to bring fully into action her natural resources. She has asked for three capital improvements, of which two have been reported necessary and practicable; viz. the cleaning out of the Pocomoke river, so as to render it navigable for flat-boats, at least about fifteen miles above where it is now available, or seventeen miles beyond Snowhill, at present the head of navigation; and a canal communication between Sinepuxent bay and the Delaware. To understand the value of these improvements, it is necessary to possess an outline of the geography of the county.

This county is bordered on the east by the Atlantic Ocean; but between this ocean and the cultivable portions of the county there is a prolonged sandy beach, varying from a few hundred yards to a quarter of a mile and upwards in breadth, and extending the whole length of the coast without a single outlet to the sea from Indian river, in Delaware, to the southern extremity of Chincoteague island in Virginia. Between this beach and the main land lies Sinepuxent bay, from one to four or five miles wide, and nearly thirty miles in length, It is a shallow sheet of water, navigable only to a short distance above South Point, at the lower end of Sinepuxent Neck. The entrance to the bay is reputed to be also very shallow. Sinepuxent Neck, about ten miles long, lies between Assateague or Trap Creek and Sinepuxent Sound, at the head of the bay. The produce of this neck, and of country on the Assateague, which, comprising the Berlin district, are amongst the most flourishing portions of the county, has thus to be sent down a long bay through a difficult entrance, to encounter finally the dangers of an ocean navigation in search of a market, whilst an easy, short, and safe transportation could be readily obtained. To effect this latter object, it has been proposed to connect Trap Creek by the St. Martin's and Indian Rivers, with the Delaware Bay, inside of Cape Henlopen. The surveys for this substantial improvement have been made, and its easy accomplishment, at a moderate expense, demonstrated.

The other improvement, solicited by Worcester county—the clearing of the Pocomoke—has likewise been found to be practicable. Viewed in connection with the canal communication just referred to, it acquires more importance than is at first sight apparent. The Pocomoke river rises in an extensive swamp, situated partly in Maryland and partly in Delaware, called the Cypress Swamp, from the profuse growth of this valuable timber by which it is covered. The bed of the river, now obstructed by large trees, lying across it in every direction, passes through the heart of the county, dividing it into two nearly equal portions. Owing to the obstacles presented by the fallen trees into its bed, its downward navigation commences only a few miles above Snowhill, after which it is free

for schooners over a distance of about twenty miles, to the mouth of the river in Pocomoke Bay, on the Chesapeake side of the county. It has been proposed to remove these impediments as far up as the use of the river is found to be impeded by this cause; and the advantages to be thence derived are shown to be considerable. It would facilitate the access to a vast body of valuable timber, and to extensive deposites of iron ore of good quality; and by confining the waters of the river within their natural channel, it would effect the drainage of a large tract of land, now an almost impenetrable swamp, covering doubtless a rich and fertile bottom. These are interesting considerations, whose importance becomes enhanced by the fact of the practicability of farther connecting, by a canal navigation, the head waters of the Pocomoke with the St. Martin River, and its projected communication with the Delaware, thus establishing a complete thoroughfare through the county, from one bay to the other.

But to render this project of internal navigation complete, another improvement seems to be required. The mud flat in Pocomoke Bay, already alluded to, forms, as is well known, a serious impediment to the free egress from the mouth of the river, through the sound into the Chesapeake, and the inquiry has been made as to the possibility of removing it. Attention having been turned to the subject, the removal was concluded to be quite impracticable, as well from its nature as from its extent; being the natural effect of causes, that, as they cannot be removed, would be constantly giving rise to the same results.—Whatever remedy might be partially applied would be therefore but temporary, very expensive, and would do but imperfectly, what, it is considered, can be accomplished in a more permanent, less costly, and more efficient manner, in another direction, namely: by connecting the Pocomoke with the Annemessex,—a project which has already met with the approbation of the Legislature, and for the performance of which an adequate sum of money has been contingently appropriated.

As this project was brought forward by an honorable Delegate from Somerset, it shows that this county is equally interested in it, as she is in another direction with the proposed connection of the Nanticoke with the Choptank. Viewing these projects connectedly, it will be seen that they are intended to establish an internal communication of some extent, calculated to bring into full operation all the resources of the country through which it will pass, enabling it to send its products to a market by the shortest route, and facilitating to it the means of obtaining the materials necessary for its improvement. Some advantages would likewise be derived from it in case of war, upon which the billigerent spirit of the times compels us unfortunately to calculate as a possible event, by providing against the almost total non-intercourse between one section of the State and another. It forms a part of the duties of the undersigned to report to your Excellency, that the geological constitution of the county is highly favorable to the easy accomplishment of these projects.

The agriculture of Worcester is not in so favorable a condition as it might be brought to with a little more exertion. The soil is alternately sand and clay, or a mixture of both in variable proportions, and entirely deficient in calcareous matter. On the western side of the Pocomoke, the upper portions of this district that are not swampy exhibit a succession of sandy knolls and ridges, with occasional basins, as it were, of level land, composed of stiff clay. The growth is principally pine and sweet gum: but on the branches, and in the swamps, there is seen a profusion of alder, maple, magnolia, kalmia, with the cypresses, of which two species were observed,—one deciduous, called the bald cypress, the other an evergreen. Between the Nassongo and Dividing creeks the soil varies from almost pure sand to a sandy loam, rarely, though sometimes clayey; the pine and sweet gum form the principal growth upon it. Along the margin of the river the soil is very sandy.

East of the Pocomoke the country is more swampy, the runs that feed the river being principally on this side. It is covered by a heavy growth of oak and cypress, and when cleared and drained shows a stiff clay soil. On some portions of the newly cleared land a young growth of papaw was observed, and in some places the less auspicious persimmon makes its appearance. Receding from the river the country, is gently elevated, forming a low dividing ridge between the feeders of the Pocomoke and the waters of the St. Martin river and Sinepuxent bay. This ridge-land runs north and south, in the direction of the main road through St. Martins, Berlin, and Newark. Sinepuxent neck is a level track of land, with a soil varying from sandy to clayey loam, occasionally passing to a stiff clay. The middle portion of the neck is tolerably well wooded; the extreme end, towards South Point, has been stripped of its timber. This, the Berlin vicinity, and the St. Martin district, are amongst the most flourishing parts of the county.

From Newark to Snowhill, on approaching the river and town, the soil becomes very sandy; and proceeding southwardly, as far as Newtown, the soil passes over a succession of sand hills, barely possessed of a soil. Towards the extreme end of the county, continuing along the Pocomoke, the country is more level, with a more substantial soil, said to yield good corn crops, and is much better wooded.

Crossing the peninsula in the direction of the dividing line between Maryland and Virginia, the country, at first level, soon appears gently undulatory, with a mixed soil, frequently a stiff clay, to within two or three miles of the sea side, when it becomes decidedly hilly; occasionally well wooded with pine, oak, hickory, and dogwood, having a good loamy soil, that could be made very productive in corn and oats. This sea side, as it is called, is an uneven country, stretching along Sinepuxent Sound descending occasionally by a gentle slope, and sometimes encroaching upon it in the shape of extended marshes. The ridge-land, between the sound and river, is more level, soil more clayey and equally improvable, but no where in a good state of cultivation.

Sinepuxent Bay or Sound, to which reference has so frequently been made, forms a very important feature in the physical geography of Worcester county. The map A. appended to this Report, and furnished for its illustration by the Topographical Engineer of the State, exhibits its actual appearance contrasted with that it bears in the maps and charts now extant. Its condition, as a navigable sheet of water, has been fully described in the "Report of the Commissioness of the States of Delaware, Maryland, and Virginia, for the survey of the sounds, between Cape Charles, and Cape Henlopen," submitted last year to the General Assembly of Maryland. For present purposes it is only necessary to consider it as a narrow and shallow sea, interspersed with broken marshes and shoals, composed of oyster shells, mixed with clam, scallop and other marine exuviæ. It is interesting in a geological respect, and not a little so, as will immediately be shown, for the agricultural resources which it actually does, and can more extensively be made to yield.

It is an interesting fact connected with the past and present condition of Sinepuxent Sound, that since the closing up of some inlets admitting the ocean into it, its waters have become thus comparatively fresh, the oysters and clams, by which they were formerly thickly inhabited, have died, leaving extensive beds of their exuviæ. These accumulations of shells, or *oyster rocks*, as they are here termed, seem to point at the manner in which similar deposites, now far inland, and constituting the shell-marl deposites of other districts, have been made. They are evidently the quiet and gradual accumulation of years, covered by a deposition of sand or mud, varying, according to circumstances, with the altering condition of the country where they are now found, and in some measure serve to explain the mode of formation of our fossiliferous beds. At no very remote period of time, they will probably furnish the prototypes of a geological formation, hitherto undescribed and characterized by the presence of a new species of zoophytes. In their present state, these oyster rocks afford an abundant supply of a very valuable material, already put to good account, but that ought to be much more extensively employed. They are now dredged, and their contents, consisting of oyster shells, clams and other marine shells, incrusted by a zoophytic production which has received the name of *Bunyan*, are burnt into lime. From this source not only an important and profitable branch of industry is created, but an invaluable product obtained for the improvement of the whole of Worcester county. The question has been asked, whether the lime obtained from this source is good? It may at once be answered, that it is as good as from any other quarter; but a more satisfactory reply will perhaps be found in

the third section of this report. Indian shell banks also are fonnd on Sinepuxent Neck, where they have been partially applied, and always with the best results, which ought to be an encouragement to their more liberel employment.

The mineral product of Worcester county is confined to the bog-ore, occurring abundantly on the Naseongo, where it has been worked with variable success, being unfortunately too much mixed with phrosphate of iron. A deposite of ore of better quality has been discovered on the Pocomoke, in the fork between this river and Duncan's mill-branch, and it is again met with in the swamps around Newtown.

A more general view of the application that can be made of the knowledge so far acquired, respecting the physical geography of the three counties just described, remains now to be taken.

Agricultural resources of the lower counties on the Eastern Shore of Maryland.

The agricultural improvements of Dorchester, Somerset, and Worcester counties, fall far short of what they might be made to attain, by a better system of cultivation, and a more liberal employment of the resources which this section of the State possesses. But to effect a thorough improvement, the attention should be first directed to the congeniality of the soil, in each district, for that species of growth from which a crop is expected. Corn and wheat are the staple commodities of the Eastern Shore, but in the present condition of things the latter is so precarious a resource, that corn may be said to be the principal produce and main dependence of the lower counties. And yet their various soils are capable of producing a number of other crops: rye, oats, beans, potatoes, (common and sweet,) and the root crops generally. But it is not only in limiting the variety of their crops, that the agriculturists of this section of country err; they neglect to take into account the peculiar susceptibilities of the various kinds of soil, to produce certain crops in preference to others; and thus an injudicious system of husbandry is followed, resulting most frequently in disappointment. On some of the light soils described as belonging to the upper portions of these counties, wheat cannot be raised, whilst these same soils may be made to yield profitable returns of corn, rye, and oats; it is therefore worse than useless to attempt to raise wheat upon such lands. The opinion that oats exhaust the soil, is an unfounded prejudice; for any system of rotation, with proper management, appears to be beneficial. Those parts, on the other hand, that possess a clay soil, with variable proportions of sand, admit of the alternate extraction from them, of corn and wheat crops, provided they be followed up by clover, cut and turned in, with lime; or if grazed not too closely.

Another popular belief, founded upon prejudice, is, that plaster will not act upon land contiguous to salt water. It is not so. Lands, whether near or remote from the sea, upon which *gypsum* did not seem to take kindly, have been found, *after being marled or limed*, to derive the usual benefits imparted by this valuable material.

In some parts of Somerset, a small portion it is true, as yet, the crop of sweet potatoes is the main one, and is found very profitable, as is evident by the thriving condition of the small farms on Big and Little Deele's Islands; whilst intelligent farmers, in other parts of the county, have turned their attention advantageously to the cultivation of beans, peas, &c. But there is yet another growth that bids fair to become of great value to the agricultural interest of the Eastern Shore of Maryland, namely, the *palma christi*, or castor bean plant, sometimes known by the name of *mole plant*.

An attempt was made in the Report of last year, to excite the interest of the farmers of Queen Anne and Caroline counties, in behalf of this new crop. It is to be regretted that they have not extensively, if at all, availed themselves of the suggestion — the bean having increased in value far beyond the most sanguine anticipations.— There ought to be, therefore, no further delay to the introduction of this growth as one of the staple commodoties of Maryland.— Without having been as yet able to ascertain the precise cause of the extraordinary demand for this article, within a few years, there is still reason to believe that the call for it will continue to be great; since, notwithstanding its extended cultivation in consequence of the high prices obtained in preceding years, it now commands a higher price than at any former period. It has been stated that the oil expressed from the beans is employed in large quantity in the manufactories of England for greasing the machinery by which these establishments are put into operation.

The culture of the palma christi presents no difficulties. It is said to thrive best in good corn lands, yielding, according to the quality of the soil, from twenty-five to forty bushels per acre. The land requires the same preparation as for corn; and the bean is planted like this grain,—in hills on which two or three plants are suffered to grow; the subsequent tillage being also the same as that practised for corn. The most tedious part of the management of this crop is the gathering of fruit, which forms a cluster with a pyramidal termination; the lower portion being occupied by the male flowers that yield no seed, and the upper by the female flowers. In the female flowers, the ovary, which is roundish and three-sided supports three linear reddish stigmas, forked at their apex, The fruit, properly speaking, is a round capsule, with three projecting sides, covered with rough spines, and divided into three cells, each containing one seed. The flowers appear in July, and the seed ripens throughout August and September. If suffered to do so on the plant, the cupsule bursts with considerable force, projecting the seed at a distance, and scattering it about the field. To avoid this is the only extra attention required by this growth, and this is done by anticipating the naturity of the fruit. The directions are, to visit the plantation a little before the commencement of the ripering season, removing those clusters that approach to maturity, (which is known by a change of color, from grayish green to a light pea-green,) and conveying them to the drying ground, where, by the effect of the sun's heat, they burst, and dislodge their seeds. The only preparation for the drying ground is to provide a small place, cleaned and levelled as for a thrashing floor, upon which the clusters are scattered. It would be advisable to locate this spot in the neighborhood of the barn, or near a shed, so as to facilitate the removal of the plants, in case of protracted wet weather, to some sheltered situation. Transient showers of rain do not, however, damage it, otherwise than by blackening the seed, whereby its sale might be injured, although it does not diminish its productiveness in oil. The occupation of gathering having once commenced, it should be so arranged as to visit each plant twice a week, morning and evening, until the whole crop has been secured. It may then be sent te a market, where, at the time of writing this Report, it commands three dollars a bushel; or, it may be made to yield its oil by the following process, as practised in Northampton county, Virginia.

The seeds are first to be thoroughly cleaned of dust, and of portions of the capsules that may have adhered to them. They are then introduced into shallow iron drawers, arranged on both sides of a furnace, where they are exposed to a gentle heat; the object of this first operation being to render the oil more easy of expression.— From these drawers they are conveyed into a powerful screw-press, by the operation of which the oil is obtained. So far however, the oil is impure: It must now, therefore, be transferred to clean iron boilers, previously supplied with water. As the boiling proceeds, the impurities that rise to the surface are skimmed off, and the clear purified oil finally makes its appearance, floating on the water. It is now carefully removed, and a sacond time subjected to the boiling process, with a small quantity of water, until the latter liquid has been entirely dissipated. This is ascertained by taking out a small portion into a vial, and observing whether it preserves its transparency as it cools. Some care is required not to push the heat too far, as then the oil would acquire a brownish hue and a hot peppery taste, which would at all events unfit it for use as a medicine. One bushel of seeds yields about one gallon and three-quarters of oil, at an expense of about 25 cents a bushel, which is refunded by the sale of the *pumice*, found to be excellent manure for corn crops. Acknowledgments are due to Mr. Smith, of Northampton county, Va., an intelligent and experienced planter, of palma christi, and manufacturer of castor oil, in the vicinity of Eastville, for the information contained in the above paragraphs.

It is needless, after what has just been said, to expatiate upon the value of the plant. That the soil and climate of at least the lower portions of the Eastern Shore of Maryland are congenial to its growth, cannot be doubted. The praise-

worthy example (crowned, it is believed, with entire success) has already been set to the inhabitants of Somerset, by one of the most intelligent farmers of the county—Col. Arnold E. Jones.

Persons well acquainted with the cultivation of rice confidently assert and believe, that there are many spots on the Eastern Shore of Maryland, well calculated to the production of this important agricultural commodity. Rice has been rsised in Maryland, in the vicinity of Salisbury, at the head of the Wicomico, and a promising attempt, the result of which has not been ascertained was recently being made opposite Vienna, on the Nanticoke. It would seem desirable to encourage such attempts, as further conducive to the practical illustration of the possibility of reclaiming a vast body of lands at present of little value. These are the marshes and cripples that occur on the margin of the large rivers on the Eastern Shore of Maryland. An examination of the actual condition of these marshes justifies the belief that they might, to a certain extent, be drained; whether sufficiently to be made permanently arable, or only to the extent of serving as more firm and sale pasturages, remains to be tried. It is thought that the single operation, though one not unattended with difficulties, of diverting a part of the course of the river so as to cause it to pass between the marsh and the mainland, would greatly contribute to their drainage. This appears from the fact, that their most elevated parts are those contiguous to the river, inclining moderately towards the firm land, adjoining which the marsh is always found to be the softest, and more liable to a total submersion. By insulating these bodies of land, always more or less miry, and thus establishing a drainage around them, it is possible they might eventually acquire sufficient consistence, without having recourse to embankments, to afford safe and valuable pasture grounds. The cripples seem irreclaimable by any other means than by embankments,—an operation deemed practicable by those who have given much attention to the subject, and who represents them as best fitted for the cultivation of rice.

Such are the agricultural resources of the lower counties on the Eastern Shore of Maryland, so far as the productiveness of the soil, and its susceptibility of improvement are concerned. It has already been stated, that the only incidental resource possessed by this section of country, is to be derived from the facilities of obtaining calcareous matter (in which the soil is essentially deficient) from the shell banks, oyster banks, and other sources already referred to. But before any hope can be indulged, that the inhabitants of this portion of the State will avail themselves of these means of bringing their lands into a higher state of cultivation than they seem to have any idea that they are capable of, it is necessary to remove a fatal impression, too generally made, that the lime derived from shells is of but little value. The result of the inquiries made to disprove this opinion, will be given in the next section of this Report.

An error equally fatal prevails among the citizens of Maryland, in reference to the counties that have just been passed in review—that they are as devoid of the interest as they have been believed to be of resources. It is hoped that the minute, and at the same time, faithful account given of them—more minute than would otherwise have seemed necessary, will have a tendency to rectify the false judgment so commonly passed upon this portion of our territory, and contribute likewise to cheer those of its inhabitants who have become disheartened at the present aspect of things, and who are too prone to believe that their industry could be better rewarded at a distance.—Industry meets with its just reward every where; but the assertion is safely ventured, that the same amount of enterprise at home, would secure more comfort and happiness, than, under any circumstances, can be expected in a newly settled country, where all that is obtained is at the cost of solid enjoyments. The adventurous merchant and speculator may find a wide field in the "Far West" to satiate, if possible, his thirst for wealth; but the industrious farmer, on the tide waters of the Chesapeake needs no better patrimony than that which he already possesses. A soil easily cultivated, and very improveable, having the means of improvement at hand; the necessaries, and even luxuries of life in abundance; a temperate and healthful climate; a free and constant intercourse with a large commercial emporium, by means of a water communication reaching to the very door of his granaries; surrounded moreover by intelligent neighbors, and a peaceful and orderly population—such are the advantages of which he can boast, as a set-off against those of any other section of our country. It is full time that he should learn to appreciate them himself.

RAISING OF CHICKENS.

Sir.—The subject upon which I am about to write, may excite a smile upon the faces of some, but if I succeed in rendering even a small service to any, the object will be accomplished. He thinks he may throw out a few hints that may be useful in icreasing the number and quality of an animal that is so universally made to conduce to the luxury of the table, and the proper substance of the human system.

In the first place, then, I would advise those interested to procure for themselves a good breed of fowls. The pair I sent you last fall, I consider nearer to profection, in all respects, than those of any other breed. I call them the ostrich breed, from their strong resemblance when about half grown to that famous bird. They are large—their habits are very domestic—they lay well—set well—hatch well—and nurse well—and and their flesh is very delicious. Have a well sheltered place for them to roost in, with a sufficient number of places for them to lay their eggs. Let your box be about a foot wide, and about 15 inches high—with partitions about ten inches apart. The box to be enclosed on every side, with the exception of about six inches of the front, and that the upper part—place the box enough against the wall to prevent the depredations of children, &c. The hen is fond of a small aperture to creep into for the purpose of laying. At the proper setting season remove your eggs carefully every night into a safe place, to prevent their freezing or getting much chilled, which will prevent their hatching. No "nest egg" is necessary upon this plan. The nest egg, in my opinion, seldom produces a chicken, early in the spring because of its generally having been chilled.

While the laying business is very brisk, prepare us many setting boxes as you may think fit. Let them be about eighteen inches square, enclosed on every side, with a loose cover for the top, not so tight as to shut out the air; put hay or straw enough in to form a nest, in which you may place about thirteen eggs—put the hen in the box and lay on the cover, with a weight sufficient to prevent her from knocking it off.—You may confine her without any injury for three or four days, at the expiration of which time you may take off the cover, and leave her until she hatches—which, almost every body knows, will be in exactly twenty one days from the time of commencement. The advantages of the large box are these: It gives room to move round without breaking the eggs, and the little ones a chance of coming out without the danger of their running away. When hens set on the ground or in unprotected places, they are subject to be interrupted by animals, and when two or three chicks are strong enough to run they leave the nest, and the mother, following them, leaves the half hatched to perish. This is a great loss of time, eggs and chickens.

As the warm season advances, always endeavor to set three hens at exactly the same time—they will consequently hatch at the same time, and you can then divide the chickens of the three between two, and they can generally take care of more than they can well hatch, if properly managed.

Make as many moveable coops as you think necessary, with a shed roof and slats in front, which place in some safe place from hogs in the sun—the sun is very invigorating to young chickens. The hen and chickens should be fed with corn meal wet with water or milk, three times a day, and watered at least once. The hen should be kept confined in this way, at least for a week to prevent her from leading them into the wet grass in the morning, which is very prejudicial to their well being. At the expiration of that time, if the weather is good you may place a block under one corner of the coop and let them out; at night they will return and take possession again, when you should take away the block, and keep them in again until the dew is off the grass. If the weather is unpleasant keep them in all day.

When the chickens acquire more size and strength, they should be fed on what is called a "chicken feeder," which is a covered enclosure six or eight feet square, with slats just close enough to admit the chickens, and exclude the older fowls.

Each of my hens last year raised to perfection, on an average, at least twenty chickens. They each raised two broods, and several hatched three times.

When the chicks are taken from one hen